



ANSI/TIA/EIA-95-B-1999
Approved: February 3, 1999

TIA/EIA-95-B

TIA/EIA STANDARD

Mobile Station-Base Station Compatibility Standard for Wideband Spread Spectrum Cellular Systems

TIA/EIA-95-B

(Upgrade and Revision of TIA/EIA-95-A)

MARCH 1999

TELECOMMUNICATIONS INDUSTRY ASSOCIATION



Representing the telecommunications industry in
association with the Electronic Industries Alliance



3GPP2 C.S0005-0 Version 1.0

Version Date: July 1999



3RD GENERATION
PARTNERSHIP
PROJECT 2
"3GPP2"

Upper Layer (Layer 3) Signaling Standard for cdma2000 Spread Spectrum Systems

COPYRIGHT

3GPP2 and its Organizational Partners claim copyright in this document and individual Organizational Partners may copyright and issue documents or standards publications in individual Organizational Partner's name based on this document. Requests for reproduction of this document should be directed to the 3GPP2 Secretariat at shoyler@tia.eia.org. Requests to reproduce individual Organizational Partner's documents should be directed to that Organizational Partner. See www.3gpp2.org for more information.

PREFACE

1 These technical requirements form a compatibility standard for 800 MHz cellular mobile
2 telecommunications systems and 1.8 to 2.0 GHz Code Division Multiple Access (CDMA)
3 Personal Communications Services (PCS) systems. They ensure that mobile stations
4 manufactured in accordance with this standard can obtain service from a system
5 manufactured in accordance with this standard. These requirements do not address the
6 quality or reliability of that service, nor do they cover equipment performance or
7 measurement procedures.

8 To ensure compatibility (see Note 1), both radio-system parameters and call-processing
9 procedures must be specified. The sequence of call-processing steps that the mobile
10 stations and base stations execute to establish calls has been specified along with the
11 digital control messages and analog signals that are exchanged between the two stations.

12 The base station is subject to fewer compatibility requirements than the dual-mode mobile
13 station. Radiated power levels, both desired and undesired, are fully specified for dual-
14 mode mobile stations to control the RF interference that one mobile station can cause
15 another. Base stations are fixed in location and their interference is controlled by proper
16 layout and operation of the system in which the station operates. Detailed call-processing
17 procedures are specified for mobile stations to ensure a uniform response to all base
18 stations. Base station call procedures are not specified in detail because they are a part of
19 the overall design of the individual system. However, the base station call-processing
20 procedures must be compatible with those specified for the mobile station. This approach
21 to writing the compatibility specification provides the system designer with sufficient
22 flexibility to respond to local service needs and to account for local topography and
23 propagation conditions.

24 This specification includes provisions for future service additions and expansion of system
25 capabilities.

26 This standard is divided into multiple parts. This part details the Layer 3 call processing
27 and procedures.

CONTENTS

| | | |
|----|---|------|
| 1 | 1. GENERAL | 1-1 |
| 2 | 1.1 Terms and Numeric Information..... | 1-1 |
| 3 | 1.1.1 Terms..... | 1-1 |
| 4 | 1.1.2 Numeric Information..... | 1-21 |
| 5 | 1.1.2.1 Reserved | 1-22 |
| 6 | 1.1.2.2 CDMA Numeric Information | 1-22 |
| 7 | 1.2 Signaling Architecture..... | 1-40 |
| 8 | 1.3 Signaling and Functionality | 1-40 |
| 9 | 1.3.1 Control Plane and Data Plane..... | 1-40 |
| 10 | 1.3.2 Interface to Layer 2 | 1-41 |
| 11 | 1.3.2.1 Message Control and Status Block (MCSB) | 1-41 |
| 12 | 1.3.2.2 Interface Primitives | 1-42 |
| 13 | 1.3.3 Resource Control - Layer 3 Signaling Control Interface Primitives | 1-43 |
| 14 | 1.3.4. Functional Description | 1-52 |
| 15 | 1.3.5. PDU Transmission and Reception | 1-52 |
| 16 | 2. REQUIREMENTS FOR MOBILE STATION CDMA OPERATION..... | 2-1 |
| 17 | 2.1 Reserved | 2-1 |
| 18 | 2.2 Reserved | 2-1 |
| 19 | 2.3 Security and Identification | 2-1 |
| 20 | 2.3.1 Mobile Station Identification Number..... | 2-1 |
| 21 | 2.3.1.1 Encoding of IMSI_M_S and IMSI_T_S | 2-3 |
| 22 | 2.3.1.2 Encoding of IMSI_M_11_12 and IMSI_T_11_12 | 2-5 |
| 23 | 2.3.1.3 Encoding of the MCC_M and MCC_T | 2-5 |
| 24 | 2.3.1.4 Mobile Directory Number..... | 2-5 |
| 25 | 2.3.2 Electronic Serial Number..... | 2-6 |
| 26 | 2.3.3 Station Class Mark | 2-6 |
| 27 | 2.3.4 Registration Memory..... | 2-6 |
| 28 | 2.3.5 Access Overload Class | 2-7 |
| 29 | 2.3.6 Reserved | 2-8 |
| 30 | 2.3.7 Reserved | 2-8 |
| 31 | 2.3.8 Home System and Network Identification..... | 2-8 |

CONTENTS

| | | |
|----|--|------|
| 1 | 2.3.9 Local Control Option..... | 2-9 |
| 2 | 2.3.10 Preferred Operation Selection | 2-9 |
| 3 | 2.3.10.1 Preferred System | 2-9 |
| 4 | 2.3.10.2 Preferred CDMA or Analog | 2-9 |
| 5 | 2.3.11 Discontinuous Reception..... | 2-9 |
| 6 | 2.3.12 Authentication, Encryption of Signaling Information/User Data and Voice | |
| 7 | Privacy | 2-9 |
| 8 | 2.3.12.1 Authentication | 2-9 |
| 9 | 2.3.12.1.1 Shared Secret Data (SSD) | 2-10 |
| 10 | 2.3.12.1.2 Random Challenge Memory (RAND) | 2-10 |
| 11 | 2.3.12.1.3 Call History Parameter (COUNT _{s-p}) | 2-10 |
| 12 | 2.3.12.1.4 Unique Challenge-Response Procedure | 2-10 |
| 13 | 2.3.12.1.5 Updating the Shared Secret Data (SSD) | 2-11 |
| 14 | 2.3.12.2 Signaling Message Encryption | 2-15 |
| 15 | 2.3.12.2.1 Encrypted Messages on the f-dsch..... | 2-16 |
| 16 | 2.3.12.2.2 Encrypted Messages on the r-dsch | 2-18 |
| 17 | 2.3.12.3 Voice Privacy | 2-21 |
| 18 | 2.3.13 Lock and Maintenance Required Orders | 2-21 |
| 19 | 2.3.14 Mobile Station Revision Identification | 2-21 |
| 20 | 2.3.15 Temporary Mobile Station Identity..... | 2-22 |
| 21 | 2.3.15.1 Overview | 2-22 |
| 22 | 2.3.15.2 TMSI Assignment Memory | 2-23 |
| 23 | 2.4 Monitored Quantities and Statistics..... | 2-24 |
| 24 | 2.5 Reserved | 2-25 |
| 25 | 2.6 Call Processing | 2-27 |
| 26 | 2.6.1 Mobile Station Initialization State..... | 2-29 |
| 27 | 2.6.1.1 System Determination Substate | 2-31 |
| 28 | 2.6.1.1.1 Custom System Selection Process..... | 2-36 |
| 29 | 2.6.1.1.2 System Selection Using Current Redirection Criteria | 2-37 |
| 30 | 2.6.1.1.3 System Selection Using System Reselection Criteria | 2-38 |
| 31 | 2.6.1.1.4 Acquiring the Selected System..... | 2-39 |

CONTENTS

| | | |
|----|---|------|
| 1 | 2.6.1.2 Pilot Channel Acquisition Substate | 2-39 |
| 2 | 2.6.1.3 Sync Channel Acquisition Substate | 2-39 |
| 3 | 2.6.1.4 Timing Change Substate..... | 2-41 |
| 4 | 2.6.2 Mobile Station Idle State..... | 2-43 |
| 5 | 2.6.2.1 Idle Procedures | 2-44 |
| 6 | 2.6.2.1.1 Paging Channel Monitoring Procedures..... | 2-44 |
| 7 | 2.6.2.1.1.1 General Overview | 2-44 |
| 8 | 2.6.2.1.1.1.1 General Overview for Individually Addressed Messages | 2-45 |
| 9 | 2.6.2.1.1.1.2 General Overview for Broadcast Messages | 2-47 |
| 10 | 2.6.2.1.1.1.2.1 Method 1: Multi-Slot Broadcast Message Transmission | 2-47 |
| 11 | 2.6.2.1.1.1.2.2 Method 2: Periodic Broadcast Paging..... | 2-48 |
| 12 | 2.6.2.1.1.2 Non-Slotted Mode Requirements | 2-49 |
| 13 | 2.6.2.1.1.3 Slotted Mode Requirements | 2-49 |
| 14 | 2.6.2.1.1.3.1 Monitoring Assigned Slots | 2-49 |
| 15 | 2.6.2.1.1.3.2 Determination of the Slot Cycle Index..... | 2-51 |
| 16 | 2.6.2.1.1.3.3 Slot Cycles for Broadcast Paging..... | 2-51 |
| 17 | 2.6.2.1.1.3.4 Monitoring Paging Channel Broadcasts | 2-52 |
| 18 | 2.6.2.1.1.3.5 Support of Broadcast Delivery Options | 2-53 |
| 19 | 2.6.2.1.1.4 Paging Channel Supervision | 2-53 |
| 20 | 2.6.2.1.2 Quick Paging Channel Monitoring Procedures | 2-53 |
| 21 | 2.6.2.1.2.1 Overview | 2-53 |
| 22 | 2.6.2.1.2.2 Requirements..... | 2-56 |
| 23 | 2.6.2.1.3 Registration..... | 2-57 |
| 24 | 2.6.2.1.4 Idle Handoff | 2-57 |
| 25 | 2.6.2.1.4.1 Pilot Search..... | 2-57 |
| 26 | 2.6.2.1.4.2 Idle Handoff Procedures..... | 2-59 |
| 27 | 2.6.2.1.5 Reserved..... | 2-62 |
| 28 | 2.6.2.1.6 System Reselection Procedures..... | 2-62 |
| 29 | 2.6.2.1.7 Slotted Timer Expiration..... | 2-63 |
| 30 | 2.6.2.2 Response to Overhead Information Operation | 2-63 |
| 31 | 2.6.2.2.1 System Parameters Message | 2-66 |
| 32 | 2.6.2.2.1.1 Stored Parameters..... | 2-66 |

CONTENTS

| | | |
|----|--|-------|
| 1 | 2.6.2.2.1.2 Paging Channel Assignment Change | 2-69 |
| 2 | 2.6.2.2.1.3 RESCAN Parameter | 2-70 |
| 3 | 2.6.2.2.1.4 Roaming Status..... | 2-70 |
| 4 | 2.6.2.2.1.5 Registration..... | 2-70 |
| 5 | 2.6.2.2.1.6 Slot Cycle Index | 2-70 |
| 6 | 2.6.2.2.1.7 PACA Disable for SID Change | 2-70 |
| 7 | 2.6.2.2.2 Access Parameters Message | 2-70 |
| 8 | 2.6.2.2.3 Neighbor List Message | 2-71 |
| 9 | 2.6.2.2.4 CDMA Channel List Message | 2-73 |
| 10 | 2.6.2.2.5 Extended System Parameters Message | 2-74 |
| 11 | 2.6.2.2.6 Global Service Redirection Message..... | 2-77 |
| 12 | 2.6.2.2.7 Extended Neighbor List Message..... | 2-78 |
| 13 | 2.6.2.2.8 General Neighbor List Message | 2-80 |
| 14 | 2.6.2.2.9 User Zone Identification Message..... | 2-83 |
| 15 | 2.6.2.2.10 Private Neighbor List Message..... | 2-83 |
| 16 | 2.6.2.2.11 Extended Global Service Redirection Message | 2-84 |
| 17 | 2.6.2.2.12 Extended CDMA Channel List Message | 2-85 |
| 18 | 2.6.2.3 Mobile Station Page Match Operation..... | 2-86 |
| 19 | 2.6.2.4 Mobile Station Order and Message Processing Operation..... | 2-87 |
| 20 | 2.6.2.5 Mobile Station Origination Operation | 2-95 |
| 21 | 2.6.2.6 Mobile Station Message Transmission Operation | 2-95 |
| 22 | 2.6.2.7 Mobile Station Power-Down Operation | 2-95 |
| 23 | 2.6.2.8 Mobile Station PACA Cancel Operation | 2-95 |
| 24 | 2.6.2.9 Mobile Station Resource Control Primitives Response Operation..... | 2-96 |
| 25 | 2.6.3 System Access State | 2-97 |
| 26 | 2.6.3.1 Access Procedures | 2-98 |
| 27 | 2.6.3.1.1 Access Attempts | 2-98 |
| 28 | 2.6.3.1.2 Reserved..... | 2-98 |
| 29 | 2.6.3.1.3 Handoffs..... | 2-98 |
| 30 | 2.6.3.1.3.1 Pilot Search | 2-99 |
| 31 | 2.6.3.1.3.2 Access Handoff..... | 2-100 |

CONTENTS

| | | |
|----|--|-------|
| 1 | 2.6.3.1.3.3 Access Probe Handoff..... | 2-101 |
| 2 | 2.6.3.1.4 System Access State Exit Procedures | 2-102 |
| 3 | 2.6.3.1.5 Reserved..... | 2-103 |
| 4 | 2.6.3.1.6 Full-TMSI Timer..... | 2-103 |
| 5 | 2.6.3.1.7 Monitoring Pilots..... | 2-103 |
| 6 | 2.6.3.1.7.1 Generation of the Initial Access Handoff List..... | 2-103 |
| 7 | 2.6.3.1.7.2 Update of the Access Handoff List..... | 2-104 |
| 8 | 2.6.3.1.7.3 Generation of the Other Reported List | 2-104 |
| 9 | 2.6.3.1.7.4 Update of OTHER_REPORTED_LIST..... | 2-104 |
| 10 | 2.6.3.1.8 Paging Channel Monitoring | 2-105 |
| 11 | 2.6.3.2 Update Overhead Information Substate..... | 2-106 |
| 12 | 2.6.3.3 Page Response Substate | 2-109 |
| 13 | 2.6.3.4 Mobile Station Order/Message Response Substate | 2-127 |
| 14 | 2.6.3.5 Mobile Station Origination Attempt Substate..... | 2-130 |
| 15 | 2.6.3.6 Registration Access Substate..... | 2-151 |
| 16 | 2.6.3.7 Mobile Station Message Transmission Substate..... | 2-156 |
| 17 | 2.6.3.8 PACA Cancel Substate..... | 2-160 |
| 18 | 2.6.4 Mobile Station Control on the Traffic Channel State | 2-162 |
| 19 | 2.6.4.1 Special Functions and Actions | 2-165 |
| 20 | 2.6.4.1.1 Forward Traffic Channel Power Control | 2-165 |
| 21 | 2.6.4.1.1.1 Forward Traffic Channel Power Control Initialization | 2-168 |
| 22 | 2.6.4.1.1.2 Processing the Power Control Parameters Message | 2-168 |
| 23 | 2.6.4.1.1.3 Processing the Power Control Message | 2-169 |
| 24 | 2.6.4.1.2 Service Configuration and Negotiation..... | 2-171 |
| 25 | 2.6.4.1.2.1 Use of Variables | 2-176 |
| 26 | 2.6.4.1.2.1.1 Maintaining the Service Request Sequence Number..... | 2-176 |
| 27 | 2.6.4.1.2.1.2 Maintaining the Service Negotiation Indicator Variable | 2-176 |
| 28 | 2.6.4.1.2.1.3 Maintaining the Service Option Request Number | 2-176 |
| 29 | 2.6.4.1.2.2 Service Subfunctions | 2-176 |
| 30 | 2.6.4.1.2.2.1 Normal Service Subfunction | 2-179 |
| 31 | 2.6.4.1.2.2.2 Waiting for Service Request Message Subfunction..... | 2-181 |
| 32 | 2.6.4.1.2.2.3 Waiting for Service Response Message Subfunction | 2-183 |

CONTENTS

| | | |
|----|---|-------|
| 1 | 2.6.4.1.2.2.4 Waiting for Service Connect Message Subfunction | 2-186 |
| 2 | 2.6.4.1.2.2.5 Waiting for Service Action Time Subfunction | 2-188 |
| 3 | 2.6.4.1.2.2.6 SO Negotiation Subfunction..... | 2-190 |
| 4 | 2.6.4.1.3 Ordering of Messages | 2-192 |
| 5 | 2.6.4.1.4 Processing the In-Traffic System Parameters Message..... | 2-193 |
| 6 | 2.6.4.1.5 Message Action Times | 2-194 |
| 7 | 2.6.4.1.6 Long Code Transition Request Processing | 2-194 |
| 8 | 2.6.4.1.7 Power Up Function (PUF) | 2-195 |
| 9 | 2.6.4.1.7.1 Processing the Power Up Function Message | 2-196 |
| 10 | 2.6.4.1.7.2 Power Up Function Procedures | 2-197 |
| 11 | 2.6.4.1.7.2.1 PUF Probe On Serving Frequency | 2-197 |
| 12 | 2.6.4.1.7.2.2 PUF Probe On PUF Target Frequency..... | 2-198 |
| 13 | 2.6.4.1.7.3 Processing the Power Up Function Completion Message | 2-199 |
| 14 | 2.6.4.1.8 Forward Traffic Channel Supervision..... | 2-200 |
| 15 | 2.6.4.1.9 Processing the Extended Release Message..... | 2-200 |
| 16 | 2.6.4.1.10 Processing the Resource Allocation Message and Resource Allocation | |
| 17 | Mini Message | 2-201 |
| 18 | 2.6.4.1.11 Processing the Extended Release Mini Message..... | 2-202 |
| 19 | 2.6.4.1.12 Processing the Resource Control Primitives | 2-202 |
| 20 | 2.6.4.1.13 Special Message Processing when Resource Control is Supported ... | 2-203 |
| 21 | 2.6.4.1.13.1 Sending Primitives to Resource Control upon Initial Establishment of | |
| 22 | Service Option Connection(s) | 2-205 |
| 23 | 2.6.4.1.13.2 Sending Primitives to Resource Control upon Addition or Release of | |
| 24 | Service Option Connection(s) | 2-207 |
| 25 | 2.6.4.1.14 Processing the Service Configuration Record..... | 2-208 |
| 26 | 2.6.4.1.15 Processing the Non-Negotiable Service Configuration Record..... | 2-210 |
| 27 | 2.6.4.2 Traffic Channel Initialization Substate | 2-213 |
| 28 | 2.6.4.3 Alerting | 2-220 |
| 29 | 2.6.4.3.1 Waiting for Order Substate | 2-220 |
| 30 | 2.6.4.3.2 Waiting for Mobile Station Answer Substate..... | 2-227 |
| 31 | 2.6.4.4 Conversation Substate..... | 2-234 |
| 32 | 2.6.4.5 Release Substate..... | 2-242 |

CONTENTS

| | | |
|----|--|-------|
| 1 | 2.6.5 Registration | 2-248 |
| 2 | 2.6.5.1 Forms of Registration..... | 2-248 |
| 3 | 2.6.5.1.1 Power-Up Registration | 2-249 |
| 4 | 2.6.5.1.2 Power-Down Registration..... | 2-249 |
| 5 | 2.6.5.1.3 Timer-Based Registration..... | 2-249 |
| 6 | 2.6.5.1.4 Distance-Based Registration..... | 2-250 |
| 7 | 2.6.5.1.5 Zone-Based Registration..... | 2-251 |
| 8 | 2.6.5.1.6 Parameter-Change Registration | 2-253 |
| 9 | 2.6.5.1.7 Ordered Registration..... | 2-253 |
| 10 | 2.6.5.1.8 Implicit Registration..... | 2-254 |
| 11 | 2.6.5.1.9 Traffic Channel Registration | 2-254 |
| 12 | 2.6.5.1.10 User Zone Registration | 2-254 |
| 13 | 2.6.5.2 Systems and Networks..... | 2-254 |
| 14 | 2.6.5.3 Roaming..... | 2-255 |
| 15 | 2.6.5.4 Registration Timers and Indicators..... | 2-257 |
| 16 | 2.6.5.5 Registration Procedures..... | 2-257 |
| 17 | 2.6.5.5.1 Actions in the Mobile Station Initialization State..... | 2-257 |
| 18 | 2.6.5.5.1.1 Power-Up or Change to a Different Operating Mode, Band Class, | |
| 19 | Serving System, or PCS Frequency Block | 2-257 |
| 20 | 2.6.5.5.1.2 Timer Maintenance | 2-257 |
| 21 | 2.6.5.5.1.3 Entering the Mobile Station Idle State | 2-258 |
| 22 | 2.6.5.5.2 Actions in the Mobile Station Idle State..... | 2-258 |
| 23 | 2.6.5.5.2.1 Idle Registration Procedures | 2-258 |
| 24 | 2.6.5.5.2.2 Processing the Registration Fields of the System Parameters Message..... | 2-259 |
| 25 | 2.6.5.5.2.3 Ordered Registration..... | 2-260 |
| 26 | 2.6.5.5.2.4 Power Off..... | 2-260 |
| 27 | 2.6.5.5.2.5 Full-TMSI Timer Expiration | 2-260 |
| 28 | 2.6.5.5.3 Actions in the System Access State | 2-261 |
| 29 | 2.6.5.5.3.1 Successful Access, Registration, or Implicit Registration | 2-261 |
| 30 | 2.6.5.5.3.2 Unsuccessful Access..... | 2-263 |
| 31 | 2.6.5.5.3.3 Power Off..... | 2-263 |
| 32 | 2.6.5.5.4 Actions in the Mobile Station Control on the Traffic Channel State ... | 2-264 |

CONTENTS

| | | |
|----|---|-------|
| 1 | 2.6.5.5.4.1 Traffic Channel Initialization..... | 2-264 |
| 2 | 2.6.5.5.4.2 Timer Maintenance | 2-264 |
| 3 | 2.6.5.5.4.3 Processing the Mobile Station Registered Message | 2-264 |
| 4 | 2.6.5.5.4.4 Power Off..... | 2-265 |
| 5 | 2.6.6 Handoff Procedures..... | 2-266 |
| 6 | 2.6.6.1 Overview | 2-266 |
| 7 | 2.6.6.1.1 Types of Handoff | 2-266 |
| 8 | 2.6.6.1.2 Pilot Sets | 2-266 |
| 9 | 2.6.6.2 Requirements..... | 2-267 |
| 10 | 2.6.6.2.1 Pilot Search..... | 2-267 |
| 11 | 2.6.6.2.2 Pilot Strength Measurements..... | 2-270 |
| 12 | 2.6.6.2.3 Handoff Drop Timer..... | 2-270 |
| 13 | 2.6.6.2.4 Pilot PN Phase | 2-272 |
| 14 | 2.6.6.2.5 Handoff Messages | 2-272 |
| 15 | 2.6.6.2.5.1 Processing of Forward Traffic Channel Handoff Messages | 2-272 |
| 16 | 2.6.6.2.5.1.1 Processing of the Forward Supplemental Burst Assignment.... | 2-318 |
| 17 | 2.6.6.2.5.1.2 Processing of the Reverse Supplemental Burst Assignment.... | 2-322 |
| 18 | 2.6.6.2.5.2 Processing of Reverse Traffic Channel Handoff Messages | 2-323 |
| 19 | 2.6.6.2.6 Set Maintenance | 2-327 |
| 20 | 2.6.6.2.6.1 Maintenance of the Active Set | 2-327 |
| 21 | 2.6.6.2.6.2 Maintenance of the Candidate Set | 2-327 |
| 22 | 2.6.6.2.6.3 Maintenance of the Neighbor Set | 2-328 |
| 23 | 2.6.6.2.7 Soft Handoff | 2-329 |
| 24 | 2.6.6.2.7.1 Forward Traffic Channel Processing..... | 2-329 |
| 25 | 2.6.6.2.7.2 Reverse Traffic Channel Power Control During Soft Handoff | 2-329 |
| 26 | 2.6.6.2.7.3 Starting Periodic Search following Soft Handoff..... | 2-330 |
| 27 | 2.6.6.2.8 CDMA-to-CDMA Hard Handoff | 2-330 |
| 28 | 2.6.6.2.8.1 Hard Handoff without Return on Failure | 2-330 |
| 29 | 2.6.6.2.8.2 Hard Handoff with Return on Failure..... | 2-331 |
| 30 | 2.6.6.2.8.2.1 Restoring the Configuration | 2-336 |
| 31 | 2.6.6.2.8.3 Search of Pilots on the CDMA Candidate Frequency | 2-339 |

CONTENTS

| | | |
|----|--|-------|
| 1 | 2.6.6.2.8.3.1 CDMA Candidate Frequency Single Search | 2-339 |
| 2 | 2.6.6.2.8.3.2 Candidate Frequency Periodic Search..... | 2-340 |
| 3 | 2.6.6.2.8.3.3 Candidate Frequency Pilot Measurements | 2-344 |
| 4 | 2.6.6.2.8.3.4 Aborting CDMA Candidate Frequency Periodic Search..... | 2-346 |
| 5 | 2.6.6.2.9 CDMA-to-Analog Handoff | 2-347 |
| 6 | 2.6.6.2.10 Search of Analog Frequencies | 2-347 |
| 7 | 2.6.6.2.10.1 Analog Frequencies Single Search | 2-347 |
| 8 | 2.6.6.2.10.2 Analog Frequencies Periodic Search | 2-348 |
| 9 | 2.6.6.2.10.3 Analog Frequency Measurements | 2-351 |
| 10 | 2.6.6.2.10.4 Aborting Analog Frequencies Periodic Search..... | 2-354 |
| 11 | 2.6.6.2.11 Processing of Reverse Supplemental Code Channels and Reverse | |
| 12 | Supplemental Channels..... | 2-354 |
| 13 | 2.6.6.2.12 Periodic Serving Frequency Pilot Report Procedure | 2-354 |
| 14 | 2.6.6.3 Examples | 2-356 |
| 15 | 2.6.7 Hash Functions and Randomization | 2-361 |
| 16 | 2.6.7.1 Hash Function..... | 2-361 |
| 17 | 2.6.7.2 Pseudorandom Number Generator | 2-362 |
| 18 | 2.6.8 CODE_CHAN_LIST _s Maintenance..... | 2-363 |
| 19 | 2.6.9 CDMA Tiered Services | 2-364 |
| 20 | 2.6.9.1 Overview | 2-364 |
| 21 | 2.6.9.1.1 Definition | 2-364 |
| 22 | 2.6.9.1.2 Types of User Zones | 2-365 |
| 23 | 2.6.9.2 Requirements..... | 2-366 |
| 24 | 2.6.9.2.1 User Zone Operation in the Mobile Station Idle State:..... | 2-366 |
| 25 | 2.6.9.2.2 User Zone Operation in the Mobile Station Control on the Traffic Channel | |
| 26 | State..... | 2-367 |
| 27 | 2.7 PDU Formats for Mobile Stations | 2-369 |
| 28 | 2.7.1.1 Reserved | 2-370 |
| 29 | 2.7.1.2 Reserved | 2-370 |
| 30 | 2.7.1.3 PDU Formats on r-csch | 2-370 |
| 31 | 2.7.1.3.1 Reserved..... | 2-370 |
| 32 | 2.7.1.3.2 PDU Contents | 2-370 |

CONTENTS

| | | |
|----|---|-------|
| 1 | 2.7.1.3.2.1 Registration Message | 2-371 |
| 2 | 2.7.1.3.2.2 Order Message..... | 2-374 |
| 3 | 2.7.1.3.2.3 Data Burst Message | 2-375 |
| 4 | 2.7.1.3.2.4 Origination Message..... | 2-377 |
| 5 | 2.7.1.3.2.5 Page Response Message | 2-386 |
| 6 | 2.7.1.3.2.6 Authentication Challenge Response Message | 2-391 |
| 7 | 2.7.1.3.2.7 Status Response Message | 2-392 |
| 8 | 2.7.1.3.2.8 TMSI Assignment Completion Message..... | 2-393 |
| 9 | 2.7.1.3.2.9 PACA Cancel Message | 2-394 |
| 10 | 2.7.1.3.2.10 Extended Status Response Message | 2-395 |
| 11 | 2.7.1.3.2.11 Service Release Response Message | 2-397 |
| 12 | 2.7.1.3.2.12 Peer-to-Peer Resource Control Message | 2-398 |
| 13 | 2.7.2 r-dsch | 2-399 |
| 14 | 2.7.2.1 Reserved..... | 2-399 |
| 15 | 2.7.2.2 Reserved..... | 2-399 |
| 16 | 2.7.2.3 PDU Formats for Messages on r-dsch | 2-399 |
| 17 | 2.7.2.3.1 Reserved..... | 2-400 |
| 18 | 2.7.2.3.2 Message Body Contents | 2-401 |
| 19 | 2.7.2.3.2.1 Order Message..... | 2-402 |
| 20 | 2.7.2.3.2.2 Authentication Challenge Response Message | 2-403 |
| 21 | 2.7.2.3.2.3 Flash With Information Message..... | 2-404 |
| 22 | 2.7.2.3.2.4 Data Burst Message | 2-405 |
| 23 | 2.7.2.3.2.5 Pilot Strength Measurement Message | 2-407 |
| 24 | 2.7.2.3.2.6 Power Measurement Report Message | 2-409 |
| 25 | 2.7.2.3.2.7 Send Burst DTMF Message | 2-413 |
| 26 | 2.7.2.3.2.8 Status Message | 2-415 |
| 27 | 2.7.2.3.2.9 Origination Continuation Message..... | 2-416 |
| 28 | 2.7.2.3.2.10 Handoff Completion Message | 2-418 |
| 29 | 2.7.2.3.2.11 Parameters Response Message..... | 2-419 |
| 30 | 2.7.2.3.2.12 Service Request Message..... | 2-420 |
| 31 | 2.7.2.3.2.13 Service Response Message | 2-422 |

CONTENTS

| | | |
|----|--|-------|
| 1 | 2.7.2.3.2.14 Service Connect Completion Message..... | 2-424 |
| 2 | 2.7.2.3.2.15 Service Option Control Message | 2-425 |
| 3 | 2.7.2.3.2.16 Status Response Message..... | 2-426 |
| 4 | 2.7.2.3.2.17 TMSI Assignment Completion Message | 2-427 |
| 5 | 2.7.2.3.2.18 Supplemental Channel Request Message | 2-428 |
| 6 | 2.7.2.3.2.19 Candidate Frequency Search Response Message..... | 2-432 |
| 7 | 2.7.2.3.2.20 Candidate Frequency Search Report Message | 2-435 |
| 8 | 2.7.2.3.2.21 Periodic Pilot Strength Measurement Message | 2-440 |
| 9 | 2.7.2.3.2.22 Outer Loop Report Message | 2-442 |
| 10 | 2.7.2.3.2.23 Resource Request Message | 2-444 |
| 11 | 2.7.2.3.2.24 Resource Request Mini Message | 2-445 |
| 12 | 2.7.2.3.2.25 Extended Release Response Message | 2-446 |
| 13 | 2.7.2.3.2.26 Extended Release Response Mini Message | 2-447 |
| 14 | 2.7.2.3.2.27 Pilot Strength Measurement Mini Message..... | 2-448 |
| 15 | 2.7.2.3.2.28 Supplemental Channel Request Mini Message | 2-449 |
| 16 | 2.7.2.3.2.29 Peer-to-Peer Resource Control Message..... | 2-450 |
| 17 | 2.7.2.3.2.30 Peer-to-Peer Resource Control Mini Message..... | 2-451 |
| 18 | 2.7.3 Orders..... | 2-452 |
| 19 | 2.7.3.1 Base Station Challenge Order..... | 2-457 |
| 20 | 2.7.3.2 Service Option Request Order..... | 2-458 |
| 21 | 2.7.3.3 Service Option Response Order | 2-459 |
| 22 | 2.7.3.4 Mobile Station Reject Order..... | 2-460 |
| 23 | 2.7.4 Information Records | 2-463 |
| 24 | 2.7.4.1 Feature Indicator | 2-465 |
| 25 | 2.7.4.2 Keypad Facility | 2-466 |
| 26 | 2.7.4.3 Called Party Number..... | 2-467 |
| 27 | 2.7.4.4 Calling Party Number | 2-468 |
| 28 | 2.7.4.5 Reserved | 2-470 |
| 29 | 2.7.4.6 Call Mode..... | 2-471 |
| 30 | 2.7.4.7 Terminal Information..... | 2-472 |
| 31 | 2.7.4.8 Roaming Information | 2-474 |
| 32 | 2.7.4.9 Security Status | 2-476 |

CONTENTS

| | | |
|----|---|-------|
| 1 | 2.7.4.10 Connected Number | 2-477 |
| 2 | 2.7.4.11 IMSI | 2-478 |
| 3 | 2.7.4.12 ESN | 2-479 |
| 4 | 2.7.4.13 Band Class Information | 2-480 |
| 5 | 2.7.4.14 Power Class Information | 2-481 |
| 6 | 2.7.4.15 Operating Mode Information | 2-482 |
| 7 | 2.7.4.16 Service Option Information | 2-484 |
| 8 | 2.7.4.17 Multiplex Option Information | 2-485 |
| 9 | 2.7.4.18 Service Configuration | 2-490 |
| 10 | 2.7.4.19 Called Party Subaddress | 2-499 |
| 11 | 2.7.4.20 Calling Party Subaddress | 2-501 |
| 12 | 2.7.4.21 Connected Subaddress | 2-502 |
| 13 | 2.7.4.22 Power Control Information | 2-503 |
| 14 | 2.7.4.23 IMSI_M | 2-504 |
| 15 | 2.7.4.24 IMSI_T | 2-505 |
| 16 | 2.7.4.25 Capability Information | 2-506 |
| 17 | 2.7.4.26 Extended Record Type - International | 2-510 |
| 18 | 2.7.4.27 Channel Configuration Capability Information | 2-511 |
| 19 | 2.7.4.27.1 FCH Type-specific Fields | 2-513 |
| 20 | 2.7.4.27.2 DCCH Type-Specific Fields | 2-516 |
| 21 | 2.7.4.27.3 FOR_SCH Type-Specific Fields | 2-518 |
| 22 | 2.7.4.27.4 REV_SCH Type-Specific Fields | 2-521 |
| 23 | 2.7.4.28 Extended Multiplex Option Information | 2-524 |
| 24 | 2.7.4.29 User Zone Update Request | 2-531 |
| 25 | 3.1 Reserved | 3-1 |
| 26 | 3.2 Reserved | 3-1 |
| 27 | 3.3 Security and Identification | 3-1 |
| 28 | 3.3.1 Authentication | 3-1 |
| 29 | 3.3.2 Encryption | 3-1 |
| 30 | 3.3.3 Voice Privacy | 3-1 |
| 31 | 3.4 Supervision | 3-1 |

CONTENTS

| | | |
|----|---|------|
| 1 | 3.4.1 Access Channel | 3-1 |
| 2 | 3.4.2 Reverse Traffic Channel | 3-1 |
| 3 | 3.5 Reserved | 3-2 |
| 4 | 3.6 Call Processing | 3-2 |
| 5 | 3.6.1 Pilot and Sync Channel Processing | 3-2 |
| 6 | 3.6.1.1 Preferred Set of CDMA Channels | 3-2 |
| 7 | 3.6.1.2 Pilot Channel Operation | 3-2 |
| 8 | 3.6.1.3 Sync Channel Operation | 3-3 |
| 9 | 3.6.2 Paging Channel and Quick Paging Channel Processing | 3-3 |
| 10 | 3.6.2.1 Paging Channel Procedures | 3-3 |
| 11 | 3.6.2.1.1 CDMA Channel Determination | 3-3 |
| 12 | 3.6.2.1.2 Paging Channel Determination | 3-4 |
| 13 | 3.6.2.1.3 Paging Slot Determination | 3-4 |
| 14 | 3.6.2.1.4 Message Transmission and Acknowledgment Procedures | 3-4 |
| 15 | 3.6.2.2 Overhead Information | 3-4 |
| 16 | 3.6.2.3 Mobile Station Directed Messages | 3-6 |
| 17 | 3.6.2.4 Broadcast Messages | 3-8 |
| 18 | 3.6.2.4.1 Broadcast Procedures for Slotted Mode | 3-8 |
| 19 | 3.6.2.4.1.1 General Overview | 3-8 |
| 20 | 3.6.2.4.1.2 Requirements for Sending Broadcast Messages | 3-9 |
| 21 | 3.6.2.4.1.2.1 Broadcast Delivery Options | 3-9 |
| 22 | 3.6.2.4.1.2.1.1 Method 1: Multi-Slot Broadcast Message Transmission | 3-9 |
| 23 | 3.6.2.4.1.2.1.2 Method 2: Periodic Broadcast Paging | 3-9 |
| 24 | 3.6.2.4.1.2.2 Duplicate Broadcast Message Transmission | 3-10 |
| 25 | 3.6.2.4.1.2.3 Periodic Broadcast Paging | 3-10 |
| 26 | 3.6.2.4.1.2.4 Broadcast Message Slot Determination | 3-10 |
| 27 | 3.6.2.5 Quick Paging Channel Processing | 3-11 |
| 28 | 3.6.2.5.1 Quick Paging Channel Determination | 3-11 |
| 29 | 3.6.2.5.2 Quick Paging Channel Slot Determination | 3-11 |
| 30 | 3.6.2.5.3 Paging Indicator Position Determination | 3-12 |
| 31 | 3.6.2.5.4 Configuration Change Indicator Position Determination | 3-12 |
| 32 | 3.6.2.5.5 Reserved Indicator Positions | 3-12 |

CONTENTS

| | | |
|----|---|------|
| 1 | 3.6.2.6 Resource Control Primitives Processing..... | 3-13 |
| 2 | 3.6.3 Access Channel Processing..... | 3-14 |
| 3 | 3.6.3.1 Reserved..... | 3-14 |
| 4 | 3.6.3.2 Reserved..... | 3-14 |
| 5 | 3.6.3.3 Response to Page Response Message..... | 3-14 |
| 6 | 3.6.3.4 Response to Orders..... | 3-15 |
| 7 | 3.6.3.5 Response to Origination Message..... | 3-15 |
| 8 | 3.6.3.6 Response to Registration Message..... | 3-16 |
| 9 | 3.6.3.7 Response to Data Burst Message..... | 3-16 |
| 10 | 3.6.3.8 Response to Service Release Response Message..... | 3-16 |
| 11 | 3.6.3.9 Response to Peer-to-Peer Resource Control Message..... | 3-16 |
| 12 | 3.6.3.10 Service Redirection..... | 3-16 |
| 13 | 3.6.4 Traffic Channel Processing..... | 3-17 |
| 14 | 3.6.4.1 Special Functions and Actions..... | 3-17 |
| 15 | 3.6.4.1.1 Forward Traffic Channel Power Control..... | 3-17 |
| 16 | 3.6.4.1.2 Service Configuration and Negotiation..... | 3-18 |
| 17 | 3.6.4.1.2.1 Use of Variables..... | 3-23 |
| 18 | 3.6.4.1.2.1.1 Maintaining the Service Request Sequence Number..... | 3-23 |
| 19 | 3.6.4.1.2.1.2 Maintaining the Service Connect Sequence Number..... | 3-23 |
| 20 | 3.6.4.1.2.1.3 Assigning Service Option Connection References..... | 3-23 |
| 21 | 3.6.4.1.2.1.4 Maintaining the Service Negotiation Indicator Variable..... | 3-23 |
| 22 | 3.6.4.1.2.1.5 Maintaining the Service Option Request Number..... | 3-23 |
| 23 | 3.6.4.1.2.2 Service Subfunctions..... | 3-24 |
| 24 | 3.6.4.1.2.2.1 Normal Service Subfunction..... | 3-26 |
| 25 | 3.6.4.1.2.2.2 Waiting for Service Request Message Subfunction..... | 3-27 |
| 26 | 3.6.4.1.2.2.3 Waiting for Service Response Message Subfunction..... | 3-29 |
| 27 | 3.6.4.1.2.2.4 Waiting for Service Action Time Subfunction..... | 3-31 |
| 28 | 3.6.4.1.2.2.5 Waiting for Service Connect Completion Message Subfunction..... | 3-32 |
| 29 | 3.6.4.1.2.2.6 SO Negotiation Subfunction..... | 3-33 |
| 30 | 3.6.4.1.3 Ordering of Messages..... | 3-35 |
| 31 | 3.6.4.1.4 Message Action Times..... | 3-35 |

CONTENTS

| | | |
|----|--|------|
| 1 | 3.6.4.1.5 Long Code Transition Request Processing | 3-36 |
| 2 | 3.6.4.1.6 Processing Resource Request Messages | 3-36 |
| 3 | 3.6.4.1.7 Reserved..... | 3-37 |
| 4 | 3.6.4.1.8 Processing the Resource Control Primitives..... | 3-37 |
| 5 | 3.6.4.1.9 Additional Operations when Resource Control is Supported..... | 3-40 |
| 6 | 3.6.4.1.9.1 Sending Primitives to Resource Control upon Initial Establishment of | |
| 7 | Service Option Connection(s)..... | 3-41 |
| 8 | 3.6.4.1.9.2 Sending Primitives to Resource Control upon Addition or Release of | |
| 9 | Service Option Connection(s)..... | 3-43 |
| 10 | 3.6.4.2 Traffic Channel Initialization Substate | 3-44 |
| 11 | 3.6.4.3 Alerting | 3-45 |
| 12 | 3.6.4.3.1 Waiting for Order Substate | 3-45 |
| 13 | 3.6.4.3.2 Waiting for Answer Substate..... | 3-50 |
| 14 | 3.6.4.4 Conversation Substate..... | 3-55 |
| 15 | 3.6.4.5 Release Substate..... | 3-61 |
| 16 | 3.6.5 Registration | 3-65 |
| 17 | 3.6.5.1 Registration on the Paging and Access Channels | 3-66 |
| 18 | 3.6.5.2 Registration on the Traffic Channels | 3-66 |
| 19 | 3.6.6 Handoff Procedures | 3-66 |
| 20 | 3.6.6.1 Overview | 3-66 |
| 21 | 3.6.6.1.1 Types of Handoff | 3-66 |
| 22 | 3.6.6.1.2 Active Set | 3-67 |
| 23 | 3.6.6.2 Requirements..... | 3-67 |
| 24 | 3.6.6.2.1 Overhead Information | 3-67 |
| 25 | 3.6.6.2.1.1 System Parameters | 3-68 |
| 26 | 3.6.6.2.1.2 Neighbor List..... | 3-68 |
| 27 | 3.6.6.2.1.3 Candidate Frequency Neighbor List | 3-68 |
| 28 | 3.6.6.2.1.4 Candidate Frequency Search List | 3-69 |
| 29 | 3.6.6.2.2 Call Processing During Handoff..... | 3-69 |
| 30 | 3.6.6.2.2.1 Processing the Pilot Strength Measurement Message | 3-69 |
| 31 | 3.6.6.2.2.2 Processing the Extended Handoff Direction Message | 3-69 |
| 32 | 3.6.6.2.2.3 Processing the Candidate Frequency Search Request Message | 3-71 |

CONTENTS

| | | |
|----|--|------|
| 1 | 3.6.6.2.2.4 Processing the Candidate Frequency Search Response Message..... | 3-71 |
| 2 | 3.6.6.2.2.5 Processing the Candidate Frequency Search Control Message | 3-71 |
| 3 | 3.6.6.2.2.6 Processing the Candidate Frequency Search Report Message..... | 3-71 |
| 4 | 3.6.6.2.2.7 Transmitting During Handoff..... | 3-72 |
| 5 | 3.6.6.2.2.8 Ordering Pilot Measurements From the Mobile Station | 3-72 |
| 6 | 3.6.6.2.2.9 Processing the Supplemental Channel Assignment Message..... | 3-72 |
| 7 | 3.6.6.2.2.10 Processing the General Handoff Direction Message | 3-75 |
| 8 | 3.6.6.2.2.11 Processing the Universal Handoff Direction Message..... | 3-80 |
| 9 | 3.6.6.2.2.12 Processing of Extended Supplemental Channel Assignment Message..... | 3-83 |
| 10 | 3.6.6.2.2.13 Processing of Forward Supplemental Channel Assignment Mini | |
| 11 | Message..... | 3-85 |
| 12 | 3.6.6.2.2.14 Processing of Reverse Supplemental Channel Assignment Mini | |
| 13 | Message..... | 3-86 |
| 14 | 3.6.6.2.2.15 Processing of the Mobile Assisted Burst Operation Parameters | |
| 15 | Message..... | 3-86 |
| 16 | 3.6.6.2.3 Active Set Maintenance..... | 3-88 |
| 17 | 3.6.6.2.4 Soft Handoff | 3-88 |
| 18 | 3.6.6.2.4.1 Receiving During Soft Handoff..... | 3-88 |
| 19 | 3.6.6.2.4.2 Transmitting During Soft Handoff..... | 3-88 |
| 20 | 3.6.7 CDMA Tiered Services..... | 3-89 |
| 21 | 3.6.7.1 Overview | 3-89 |
| 22 | 3.6.7.1.1 Definition | 3-89 |
| 23 | 3.6.7.1.2 Types of User Zones | 3-89 |
| 24 | 3.6.7.2 Requirements..... | 3-89 |
| 25 | 3.6.7.2.1 User Zone Identification Message..... | 3-90 |
| 26 | 3.6.7.2.2 Private Neighbor List Message..... | 3-90 |
| 27 | 3.6.7.2.3 Flash With Information Message..... | 3-90 |
| 28 | 3.6.7.2.4 Feature Notification Message | 3-90 |
| 29 | 3.7 PDU Formats for Messages | 3-91 |
| 30 | 3.7.1 Reserved..... | 3-91 |
| 31 | 3.7.2 f-csch | 3-91 |
| 32 | 3.7.2.1 Reserved..... | 3-91 |

CONTENTS

| | | |
|----|--|-------|
| 1 | 3.7.2.2 Reserved | 3-91 |
| 2 | 3.7.2.3 PDU Formats for Messages on the f-csch | 3-92 |
| 3 | 3.7.2.3.1 Reserved..... | 3-93 |
| 4 | 3.7.2.3.2 Message Body Contents | 3-93 |
| 5 | 3.7.2.3.2.1 System Parameters Message | 3-94 |
| 6 | 3.7.2.3.2.2 Access Parameters Message | 3-102 |
| 7 | 3.7.2.3.2.3 Neighbor List Message | 3-107 |
| 8 | 3.7.2.3.2.4 CDMA Channel List Message | 3-109 |
| 9 | 3.7.2.3.2.5 Reserved..... | 3-110 |
| 10 | 3.7.2.3.2.6 Reserved..... | 3-111 |
| 11 | 3.7.2.3.2.7 Order Message | 3-112 |
| 12 | 3.7.2.3.2.8 Channel Assignment Message | 3-113 |
| 13 | 3.7.2.3.2.9 Data Burst Message | 3-124 |
| 14 | 3.7.2.3.2.10 Authentication Challenge Message | 3-126 |
| 15 | 3.7.2.3.2.11 SSD Update Message | 3-127 |
| 16 | 3.7.2.3.2.12 Feature Notification Message | 3-128 |
| 17 | 3.7.2.3.2.13 Extended System Parameters Message | 3-129 |
| 18 | 3.7.2.3.2.14 Extended Neighbor List Message | 3-139 |
| 19 | 3.7.2.3.2.15 Status Request Message | 3-142 |
| 20 | 3.7.2.3.2.16 Service Redirection Message | 3-146 |
| 21 | 3.7.2.3.2.17 General Page Message..... | 3-151 |
| 22 | 3.7.2.3.2.18 Global Service Redirection Message..... | 3-154 |
| 23 | 3.7.2.3.2.19 TMSI Assignment Message..... | 3-159 |
| 24 | 3.7.2.3.2.20 PACA Message..... | 3-160 |
| 25 | 3.7.2.3.2.21 Extended Channel Assignment Message | 3-162 |
| 26 | 3.7.2.3.2.22 General Neighbor List Message | 3-188 |
| 27 | 3.7.2.3.2.23 User Zone Identification Message | 3-198 |
| 28 | 3.7.2.3.2.24 Private Neighbor List Message | 3-199 |
| 29 | 3.7.2.3.2.25 Service Release Message | 3-202 |
| 30 | 3.7.2.3.2.26 Sync Channel Message | 3-203 |
| 31 | 3.7.2.3.2.27 Extended Global Service Redirection Message | 3-206 |
| 32 | 3.7.2.3.2.28 Extended CDMA Channel List Message..... | 3-210 |

CONTENTS

| | | |
|----|---|-------|
| 1 | 3.7.3 f-dsch..... | 3-212 |
| 2 | 3.7.3.1 Reserved..... | 3-212 |
| 3 | 3.7.3.2 Reserved..... | 3-212 |
| 4 | 3.7.3.3 PDU Formats on the f-dsch..... | 3-213 |
| 5 | 3.7.3.3.1 Reserved..... | 3-214 |
| 6 | 3.7.3.3.2 Message Body Contents | 3-214 |
| 7 | 3.7.3.3.2.1 Order Message..... | 3-215 |
| 8 | 3.7.3.3.2.2 Authentication Challenge Message | 3-216 |
| 9 | 3.7.3.3.2.3 Alert With Information Message | 3-217 |
| 10 | 3.7.3.3.2.4 Data Burst Message | 3-218 |
| 11 | 3.7.3.3.2.5 Reserved..... | 3-220 |
| 12 | 3.7.3.3.2.6 Analog Handoff Direction Message..... | 3-221 |
| 13 | 3.7.3.3.2.7 In-Traffic System Parameters Message..... | 3-223 |
| 14 | 3.7.3.3.2.8 Neighbor List Update Message | 3-227 |
| 15 | 3.7.3.3.2.9 Send Burst DTMF Message..... | 3-228 |
| 16 | 3.7.3.3.2.10 Power Control Parameters Message..... | 3-229 |
| 17 | 3.7.3.3.2.11 Retrieve Parameters Message | 3-231 |
| 18 | 3.7.3.3.2.12 Set Parameters Message..... | 3-232 |
| 19 | 3.7.3.3.2.13 SSD Update Message | 3-233 |
| 20 | 3.7.3.3.2.14 Flash With Information Message..... | 3-234 |
| 21 | 3.7.3.3.2.15 Mobile Station Registered Message | 3-235 |
| 22 | 3.7.3.3.2.16 Status Request Message..... | 3-237 |
| 23 | 3.7.3.3.2.17 Extended Handoff Direction Message..... | 3-239 |
| 24 | 3.7.3.3.2.18 Service Request Message..... | 3-246 |
| 25 | 3.7.3.3.2.19 Service Response Message | 3-248 |
| 26 | 3.7.3.3.2.20 Service Connect Message | 3-250 |
| 27 | 3.7.3.3.2.21 Service Option Control Message..... | 3-253 |
| 28 | 3.7.3.3.2.22 TMSI Assignment Message..... | 3-254 |
| 29 | 3.7.3.3.2.23 Service Redirection Message | 3-255 |
| 30 | 3.7.3.3.2.24 Supplemental Channel Assignment Message..... | 3-258 |
| 31 | 3.7.3.3.2.25 Power Control Message | 3-267 |

CONTENTS

| | | |
|----|--|-------|
| 1 | 3.7.3.3.2.26 Extended Neighbor List Update Message | 3-289 |
| 2 | 3.7.3.3.2.27 Candidate Frequency Search Request Message | 3-295 |
| 3 | 3.7.3.3.2.28 Candidate Frequency Search Control Message | 3-306 |
| 4 | 3.7.3.3.2.29 Power Up Function Message | 3-307 |
| 5 | 3.7.3.3.2.30 Power Up Function Completion Message | 3-309 |
| 6 | 3.7.3.3.2.31 General Handoff Direction Message | 3-311 |
| 7 | 3.7.3.3.2.32 Resource Allocation Message | 3-329 |
| 8 | 3.7.3.3.2.33 Resource Allocation Mini Message | 3-331 |
| 9 | 3.7.3.3.2.34 Extended Release Message | 3-332 |
| 10 | 3.7.3.3.2.35 Extended Release Mini Message | 3-335 |
| 11 | 3.7.3.3.2.36 Universal Handoff Direction Message | 3-336 |
| 12 | 3.7.3.3.2.37 Extended Supplemental Channel Assignment Message | 3-365 |
| 13 | 3.7.3.3.2.38 Forward Supplemental Channel Assignment Mini Message | 3-378 |
| 14 | 3.7.3.3.2.39 Reverse Supplemental Channel Assignment Mini Message | 3-380 |
| 15 | 3.7.3.3.2.40 Mobile Assisted Burst Operation Parameters Message | 3-382 |
| 16 | 3.7.4 Orders | 3-385 |
| 17 | 3.7.4.1 Base Station Challenge Confirmation Order | 3-389 |
| 18 | 3.7.4.2 Service Option Request Order | 3-390 |
| 19 | 3.7.4.3 Service Option Response Order | 3-391 |
| 20 | 3.7.4.4 Status Request Order | 3-392 |
| 21 | 3.7.4.5 Registration Accepted Order | 3-393 |
| 22 | 3.7.4.6 Periodic Pilot Measurement Request Order | 3-394 |
| 23 | 3.7.5 Information Records | 3-396 |
| 24 | 3.7.5.1 Display | 3-400 |
| 25 | 3.7.5.2 Called Party Number | 3-401 |
| 26 | 3.7.5.3 Calling Party Number | 3-402 |
| 27 | 3.7.5.4 Connected Number | 3-404 |
| 28 | 3.7.5.5 Signal | 3-406 |
| 29 | 3.7.5.6 Message Waiting | 3-411 |
| 30 | 3.7.5.7 Service Configuration | 3-412 |
| 31 | 3.7.5.7.1 Channel Configuration for the Supplemental Channel Type-specific Field | 3-422 |
| 32 | 3.7.5.8 Called Party Subaddress | 3-424 |

CONTENTS

| | | |
|----|--|-------|
| 1 | 3.7.5.9 Calling Party Subaddress | 3-425 |
| 2 | 3.7.5.10 Connected Subaddress | 3-426 |
| 3 | 3.7.5.11 Redirecting Number | 3-427 |
| 4 | 3.7.5.12 Redirecting Subaddress | 3-430 |
| 5 | 3.7.5.13 Meter Pulses | 3-431 |
| 6 | 3.7.5.14 Parametric Alerting | 3-432 |
| 7 | 3.7.5.15 Line Control | 3-434 |
| 8 | 3.7.5.16 Extended Display | 3-435 |
| 9 | 3.7.5.17 Extended Record Type - International..... | 3-438 |
| 10 | 3.7.5.18 User Zone Update | 3-439 |
| 11 | 3.7.5.19 User Zone Reject | 3-440 |
| 12 | 3.7.5.20 Non negotiable System Configuration..... | 3-442 |
| 13 | F.1 Introduction..... | F-1 |
| 14 | F.2 Mobile Station Indicators | F-2 |
| 15 | F.2.1 Permanent Mobile Station Indicators..... | F-2 |
| 16 | F.2.2 Semi-permanent Mobile Station Indicators | F-3 |
| 17 | F.3 NAM Indicators | F-4 |
| 18 | | |

FIGURES

| | | |
|----|---|-------|
| 1 | Figure 1.3.1-1. IS-2000 Signaling – General Architecture..... | 1-41 |
| 2 | Figure 2.3.1-1. IMSI Structure | 2-1 |
| 3 | Figure 2.3.1-2. IMSI_S Binary Mapping | 2-2 |
| 4 | Figure 2.3.12.1.1-1. Partitioning of SSD | 2-10 |
| 5 | Figure 2.3.12.1.5-1. SSD Update Message Flow..... | 2-13 |
| 6 | Figure 2.3.12.1.5-2. Computation of Shared Secret Data (SSD)..... | 2-14 |
| 7 | Figure 2.3.12.1.5-3. Computation of AUTHBS | 2-14 |
| 8 | Figure 2.3.15-1. TMSI Zone Example | 2-23 |
| 9 | Figure 2.6-1. Mobile Station Call Processing States..... | 2-28 |
| 10 | Figure 2.6.1-1. Mobile Station Initialization State..... | 2-30 |
| 11 | Figure 2.6.1.4-1. Mobile Station Internal Timing | 2-42 |
| 12 | Figure 2.6.2.1.1.1-1. Mobile Station Idle Slotted Mode Structure Example | 2-46 |
| 13 | Figure 2.6.2.1.1.1.2.1-1. Multi-Slot Broadcast Message Transmission Example | 2-48 |
| 14 | Figure 2.6.2.1.1.1.2.2-1. Periodic Broadcast Paging Example | 2-49 |
| 15 | Figure 2.6.2.1.2.1-1. Quick Paging Channel Timeline..... | 2-55 |
| 16 | Figure 2.6.3-1. System Access State | 2-98 |
| 17 | Figure 2.6.4-1. Mobile Station Control on the Traffic Channel State | 2-164 |
| 18 | Figure 2.6.4.1.2.2-1. Mobile Station Service Subfunctions | 2-178 |
| 19 | Figure 2.6.4.1.7-1. Structure of PUF Attempt | 2-196 |
| 20 | Figure 2.6.5.2-1. Systems and Networks Example | 2-255 |
| 21 | Figure 2.6.6.2.5.1.1-1. New Supplemental Channel Assignment Received while a Previous | |
| 22 | Supplemental Channel Assignment is in Progress | 2-320 |
| 23 | Figure 2.6.6.2.5.1.1-2. New Supplemental Channel Assignment Received before a | |
| 24 | Previous Supplemental Channel Assignment starts | 2-320 |
| 25 | Figure 2.6.6.3-1. Handoff Threshold Example if P_REV_IN_USE _S is Less Than or Equal to | |
| 26 | Three, or SOFT_SLOPE _S is Equal to '000000' | 2-357 |
| 27 | Figure 2.6.6.3-2. Handoff Threshold Example if P_REV_IN_USE _S is Greater Than Three, | |
| 28 | and SOFT_SLOPE _S is Not Equal to '000000' | 2-358 |
| 29 | Figure 2.6.6.3-3. Pilot Strength Measurements Triggered by a Candidate Pilot if | |
| 30 | P_REV_IN_USE _S = 3 or SOFT_SLOPE _S = '000000' | 2-359 |
| 31 | Figure 2.6.6.3-4. Pilot Strength Measurements Triggered by a Candidate Pilot if | |
| 32 | P_REV_IN_USE _S > 3 and SOFT_SLOPE _S is Not Equal to '000000' | 2-360 |
| 33 | Figure B-1A. Simple Call Flow, Mobile Station Origination Example Using Service Option | |

FIGURES

| | | |
|----|---|------|
| 1 | Negotiation with Service Option 1 | B-1 |
| 2 | Figure B-1B. Simple Call Flow, Mobile Station Origination Example Using Service | |
| 3 | Negotiation with Service Option 1 | B-2 |
| 4 | Figure B-2A. Simple Call Flow, Mobile Station Termination Example Using Service Option | |
| 5 | Negotiation with Service Option 1 | B-3 |
| 6 | Figure B-2B. Simple Call Flow, Mobile Station Termination Example Using Service | |
| 7 | Negotiation with Service Option 1 | B-4 |
| 8 | Figure B-3. Simple Call Flow, Mobile Station Initiated Call Disconnect Example | B-5 |
| 9 | Figure B-4. Simple Call Flow, Base Station Initiated Call Disconnect Example | B-5 |
| 10 | Figure B-5. Simple Call Flow, Three-Party Calling Example | B-6 |
| 11 | Figure B-6. Simple Call Flow, Call-Waiting Example | B-7 |
| 12 | Figure B-7. Call Processing During Soft Handoff | B-8 |
| 13 | Figure B-8. Call Processing During Sequential Soft Handoff (Part 1 of 2) | B-9 |
| 14 | Figure B-8. Call Processing During Sequential Soft Handoff (Part 2 of 2) | B-10 |
| 15 | Figure B-9. PACA Call Processing (Part 1 of 2) | B-11 |
| 16 | Figure B-9. PACA Call Processing (Part 2 of 2) | B-12 |
| 17 | Figure B-10. Call Flow for Same Frequency Hard Handoff Failure Recovery | B-13 |
| 18 | Figure B-11. Call Flow for Inter-Frequency Hard Handoff Failure Recovery without Search | B-14 |
| 19 | Figure B-12. Call Flow for Inter-Frequency Handoff (Single Search Using Candidate | |
| 20 | Frequency Search Control Message) (Part 1 of 2) | B-15 |
| 21 | Figure B-12. Call Flow for Inter-Frequency Handoff (Single Search Using Candidate | |
| 22 | Frequency Search Control Message) (Part 2 of 2) | B-16 |
| 23 | Figure B-13. Call Flow for Inter-Frequency Handoff (Periodic Search Using Candidate | |
| 24 | Frequency Search Control Message) (Part 1 of 3) | B-17 |
| 25 | Figure B-13. Call Flow for Inter-Frequency Handoff (Periodic Search Using Candidate | |
| 26 | Frequency Search Control Message) (Part 2 of 3) | B-18 |
| 27 | Figure B-13. Call Flow for Inter-Frequency Handoff (Periodic Search Using Candidate | |
| 28 | Frequency Search Control Message) (Part 3 of 3) | B-19 |
| 29 | Figure B-14. Call Flow for Inter-Frequency Handoff (Single Search Using General Handoff | |
| 30 | Direction Message) (Part 1 of 3) | B-20 |
| 31 | Figure B-14. Call Flow for Inter-Frequency Handoff (Single Search Using General Handoff | |
| 32 | Direction Message) (Part 2 of 3) | B-21 |
| 33 | Figure B-14. Call Flow for Inter-Frequency Handoff (Single Search Using General Handoff | |
| 34 | Direction Message) (Part 3 of 3) | B-22 |

FIGURES

| | | |
|----|---|------|
| 1 | Figure B-15. Call Flow for Inter-Frequency Handoff (Periodic Search Using General | |
| 2 | Handoff Direction Message) (Part 1 of 4) | B-23 |
| 3 | Figure B-15. Call Flow for Inter-Frequency Handoff (Periodic Search Using General | |
| 4 | Handoff Direction Message) (Part 2 of 4) | B-24 |
| 5 | Figure B-15. Call Flow for Inter-Frequency Handoff (Periodic Search Using General | |
| 6 | Handoff Direction Message) (Part 3 of 4) | B-25 |
| 7 | Figure B-15. Call Flow for Inter-Frequency Handoff (Periodic Search Using General | |
| 8 | Handoff Direction Message) (Part 4 of 4) | B-26 |
| 9 | Figure B-16. Call Flow for Periodic Search on F2 from F1, Failed Handoff Attempt to F3, | |
| 10 | Continued Periodic Search of F2 from F1 (Part 1 of 3) | B-27 |
| 11 | Figure B-16. Call Flow for Periodic Search on F2 from F1, Failed Handoff Attempt to F3, | |
| 12 | Continued Periodic Search of F2 from F1 (Part 2 of 3) | B-28 |
| 13 | Figure B-16. Call Flow for Periodic Search on F2 from F1, Failed Handoff Attempt to F3, | |
| 14 | Continued Periodic Search of F2 from F1 (Part 3 of 3) | B-29 |
| 15 | Figure B-17. Call Flow for Periodic Search on F2 from F1, Successful Handoff to F3, | |
| 16 | Continued Periodic Search on F2 from F3 (Part 1 of 2) | B-30 |
| 17 | Figure B-17. Call Flow for Periodic Search on F2 from F1, Successful Handoff to F3, | |
| 18 | Continued Periodic Search on F2 from F3 (Part 2 of 2) | B-31 |
| 19 | Figure B-18. Simple Call Flow Mobile Station Origination Example with Transmission on | |
| 20 | Forward Supplemental Code Channels (Part 1 of 2) | B-32 |
| 21 | Figure B-18. Simple Call Flow Mobile Station Origination Example with Transmission on | |
| 22 | Forward Supplemental Code Channels (Part 2 of 2) | B-33 |
| 23 | Figure B-19. Simple Call Flow Mobile Station Origination Example with Transmission on | |
| 24 | Reverse Supplemental Code Channels (Part 1 of 2) | B-34 |
| 25 | Figure B-19. Simple Call Flow Mobile Station Origination Example with Transmission on | |
| 26 | Reverse Supplemental Code Channels (Part 2 of 2) | B-35 |
| 27 | Figure B-20. Simple Call Flow, Mobile Station Termination Example with Transmission on | |
| 28 | Forward Supplemental Code Channel(s) (Part 1 of 3) | B-36 |
| 29 | Figure B-20. Simple Call Flow, Mobile Station Termination Example with Transmission on | |
| 30 | Forward Supplemental Code Channel(s) (Part 2 of 3) | B-37 |
| 31 | Figure B-20. Simple Call Flow, Mobile Station Termination Example with Transmission on | |
| 32 | Forward Supplemental Code Channel(s) (Part 3 of 3) | B-38 |
| 33 | Figure B-21. Simple Call Flow, Mobile Station Termination Example with Transmission on | |
| 34 | Reverse Supplemental Code Channel(s) (Part 1 of 3) | B-39 |
| 35 | Figure B-21. Simple Call Flow, Mobile Station Termination Example with Transmission on | |
| 36 | Reverse Supplemental Code Channel(s) (Part 2 of 3) | B-40 |

FIGURES

| | | |
|----|--|------|
| 1 | Figure B-21. Simple Call Flow, Mobile Station Termination Example with Transmission on | |
| 2 | Reverse Supplemental Code Channel(s) (Part 3 of 3) | B-41 |
| 3 | Figure B-22. Dormant/Null to Active State Transition (MS Initiated)..... | B-42 |
| 4 | Figure B-23. Dormant/Null to Active State Transition (BS Initiated) | B-43 |
| 5 | Figure B-24. Suspended to Active State Transition (MS Initiated)..... | B-44 |
| 6 | Figure B-25. Suspended to Active State Transition (BS Initiated) | B-45 |
| 7 | Figure B-26. Connecting an Additional Service Option (MS Initiated)..... | B-46 |
| 8 | Figure B-27. Connecting an Additional Service Option (BS Initiated) | B-47 |
| 9 | Figure B-28. Releasing a Service Option that is not the last one connected (BS Initiated)..... | B-48 |
| 10 | Figure B-29. Active/Control Hold to Suspended State Transition (BS Initiated) | B-49 |
| 11 | Figure B-30. Active/Control Hold to Dormant/Null State Transition (BS Initiated) | B-50 |
| 12 | Figure B-31. Suspended to Dormant/Null State Transition (BS Initiated) | B-51 |
| 13 | Figure B-32. Active to Control Hold State Transition (BS Initiated) | B-52 |
| 14 | Figure B-33. Control Hold to Active State Transition (MS Initiated) | B-53 |
| 15 | Figure B-34. Control Hold to Active State Transition (BS Initiated) | B-54 |
| 16 | Figure B-35. MS Requested Downward State Transition (includes Active to Control Hold, | |
| 17 | Active/Control to Suspended, Active/Control Hold to Dormant/Null, | |
| 18 | and Suspended to Dormant/Null)..... | B-55 |
| 19 | Figure B-36. Replacement of Service Option Connection due to Handoff..... | B-56 |
| 20 | Figure B-37. Error Scenario - Dormant/Null to Active or Suspended to Active State | |
| 21 | Transition (MS initiated or BS initiated) but peer Resource Control | |
| 22 | not in sync | B-57 |
| 23 | Figure B-38. Error Scenario - Suspended to Dormant/Null State Transition (BS initiated) | |
| 24 | but MS not in sync..... | B-58 |
| 25 | | |
| 26 | | |

TABLES

| | | |
|----|---|-------|
| 1 | Table 1.3.3-1. Primitives sent to the Layer 3 Signaling Control by the Resource Control | 1-49 |
| 2 | Table 1.3.3-2. Primitives sent to the Resource Control by the Layer 3 Signaling Control | 1-50 |
| 3 | Table 1.3.3-3. Additional primitives exchanged between the Resource Control and the | |
| 4 | Layer 3 Signaling Control | 1-51 |
| 5 | Table 2.3.1.1-1. Decimal to Binary Conversion Table..... | 2-3 |
| 6 | Table 2.3.1.1-2. BCD Mapping | 2-4 |
| 7 | Table 2.3.3-1. Station Class Mark | 2-6 |
| 8 | Table 2.3.5-1. ACCOLC _p Mapping for ACCOLC 0 through ACCOLC 9 | 2-8 |
| 9 | Table 2.3.5-2. ACCOLC _p Mapping for ACCOLC 10 through ACCOLC 15 | 2-8 |
| 10 | Table 2.3.12.1-1. Auth_Signature Input Parameters | 2-10 |
| 11 | Table 2.4-1. Monitored Quantities and Statistics..... | 2-24 |
| 12 | Table 2.6.6.2.1-1. Searcher Window Sizes..... | 2-268 |
| 13 | Table 2.6.6.2.1-2. Search Window Offset..... | 2-268 |
| 14 | Table 2.6.6.2.3-1. Handoff Drop Timer Expiration Values..... | 2-271 |
| 15 | Table 2.6.6.2.5.1-1. Search Parameter Settings | 2-280 |
| 16 | Table 2.6.6.2.8.3.2-1. Search Period Values..... | 2-342 |
| 17 | Table 2.6.7.1-1. Hash Function Modifier..... | 2-362 |
| 18 | Table 2.7.1.3-1. Messages on r-csch | 2-370 |
| 19 | Table 2.7.1.3.2.1-1. Registration Type (REG_TYPE) Codes | 2-371 |
| 20 | Table 2.7.1.3.2.1-2. RETURN_CAUSE Codes..... | 2-372 |
| 21 | Table 2.7.1.3.2.4-1. REQUEST_MODE Codes | 2-379 |
| 22 | Table 2.7.1.3.2.4-2. Number Types..... | 2-380 |
| 23 | Table 2.7.1.3.2.4-3. Numbering Plan Identification..... | 2-380 |
| 24 | Table 2.7.1.3.2.4-4. Representation of DTMF Digits..... | 2-381 |
| 25 | Table 2.7.1.3.2.4-5. Encryption Algorithms Supported | 2-382 |
| 26 | Table 2.7.1.3.2.4-6. Channel Indicator..... | 2-383 |
| 27 | Table 2.7.1.3.2.5-1. Channel indicator..... | 2-389 |
| 28 | Table 2.7.2.3-1. Messages on r-dsch | 2-400 |
| 29 | Table 2.7.2.3.2.7-1. Recommended DTMF Pulse Width..... | 2-413 |
| 30 | Table 2.7.2.3.2.7-2. Recommended Minimum Inter-digit Interval | 2-414 |
| 31 | Table 2.7.2.3.2.12-1. REQ_PURPOSE Codes | 2-420 |

TABLES

| | | |
|----|---|-------|
| 1 | Table 2.7.2.3.2.13-1. RESP_PURPOSE Codes..... | 2-422 |
| 2 | Table 2.7.2.3.2.18-1. Channel Indicator..... | 2-431 |
| 3 | Table 2.7.3-1. Order and Order Qualification Codes Used on the r-dsch and the r-csch | |
| 4 | (Part 1 of 4)..... | 2-453 |
| 5 | Table 2.7.3-1. Order and Order Qualification Codes Used on the r-dsch and the r-csch | |
| 6 | (Part 2 of 4)..... | 2-454 |
| 7 | Table 2.7.3-1. Order and Order Qualification Codes Used on the r-dsch and the r-csch | |
| 8 | (Part 3 of 4)..... | 2-455 |
| 9 | Table 2.7.3-1. Order and Order Qualification Codes Used on the r-dsch and the r-csch | |
| 10 | (Part 4 of 4)..... | 2-456 |
| 11 | Table 2.7.3.5-1. REJECTED_PDU_TYPE codes..... | 2-462 |
| 12 | Table 2.7.4-1. Information Record Types (Part 1 of 2)..... | 2-463 |
| 13 | Table 2.7.4-1. Information Record Types (Part 2 of 2)..... | 2-464 |
| 14 | Table 2.7.4.1-1. Feature Identifiers..... | 2-465 |
| 15 | Table 2.7.4.4-1. Presentation Indicators..... | 2-468 |
| 16 | Table 2.7.4.4-2. Screening Indicators..... | 2-469 |
| 17 | Table 2.7.4.15-1. OP_MODE for P_REV_IN_USE _S Less Than or Equal to Three..... | 2-482 |
| 18 | Table 2.7.4.15-2. OP_MODE for P_REV_IN_USE _S Greater Than Three..... | 2-483 |
| 19 | Table 2.7.4.17-1. Forward Fundamental Traffic Channel Transmission Rates for Rate Set 12..... | 2-487 |
| 20 | Table 2.7.4.17-2. Forward Fundamental Traffic Channel Transmission Rates for Rate Set 22..... | 2-487 |
| 21 | Table 2.7.4.17-3. Reverse Fundamental Traffic Channel Transmission Rates for Rate Set 12..... | 2-488 |
| 22 | Table 2.7.4.17-4. Reverse Fundamental Traffic Channel Transmission Rates for Rate Set 22..... | 2-489 |
| 23 | Table 2.7.4.18-1. FOR_TRAFFIC Codes..... | 2-493 |
| 24 | Table 2.7.4.18-2. REV_TRAFFIC Codes..... | 2-494 |
| 25 | Table 2.7.4.19-1. Subaddress Types..... | 2-499 |
| 26 | Table 2.7.4.19-2. Odd/Even Indicator..... | 2-500 |
| 27 | Table 2.7.4.25-1. Set of supported Reverse Pilot Gating Rates..... | 2-508 |
| 28 | Table 2.7.4.27.1-1. Forward Channel Radio Configurations Supported..... | 2-514 |
| 29 | Table 2.7.4.27.1-2. Reverse Channel Radio Configurations Supported..... | 2-515 |
| 30 | Table 2.7.4.27.2-1. DCCH Frame Size Supported..... | 2-516 |
| 31 | Table 2.7.4.27.3-1. Block Size..... | 2-519 |
| 32 | Table 2.7.4.28-1. Forward Fundamental Channel Transmission Rates for Rate Set 1..... | 2-526 |

TABLES

| | |
|----|--|
| 1 | Table 2.7.4.28-2. Forward Fundamental Channel Transmission Rates for Rate Set 2..2-527 |
| 2 | Table 2.7.4.28-3. Reverse Fundamental Channel Transmission Rates for Rate Set 1..2-528 |
| 3 | Table 2.7.4.28-4. Reverse Fundamental Channel Transmission Rates for Rate Set 2..2-528 |
| 4 | Table 3.7.2.3-1. f_csch Messages3-92 |
| 5 | Table 3.7.2.3.2.1-1. Value of Zone Timer.....3-96 |
| 6 | Table 3.7.2.3.2.1-2. Base Station Classes3-97 |
| 7 | Table 3.7.2.3.2.3-1. Neighbor Configuration Field.....3-108 |
| 8 | Table 3.7.2.3.2.8-1. Assignment Mode3-116 |
| 9 | Table 3.7.2.3.2.8-2. Message Encryption Modes3-117 |
| 10 | Table 3.7.2.3.2.8-3. Default Configuration3-121 |
| 11 | Table 3.7.2.3.2.13-1. Preferred MSID Types3-131 |
| 12 | Table 3.7.2.3.2.13-2. QPCH Indicator Data Rate3-137 |
| 13 | Table 3.7.2.3.2.13-3 Quick Paging Channel Transmit Power Level3-137 |
| 14 | Table 3.7.2.3.2.14-1. Neighbor Configuration Field.....3-140 |
| 15 | Table 3.7.2.3.2.14-2. Search Priority Field3-141 |
| 16 | Table 3.7.2.3.2.15-1. Qualification Information Type3-142 |
| 17 | Table 3.7.2.3.2.15-2. Status Information Record Types3-143 |
| 18 | Table 3.7.2.3.2.15-3. Operating Mode for MOB_P_REV Less Than or Equal to Three ..3-145 |
| 19 | Table 3.7.2.3.2.15-4. Operating Mode for MOB_P_REV Greater Than Three3-145 |
| 20 | Table 3.7.2.3.2.16-1. Redirection Types3-146 |
| 21 | Table 3.7.2.3.2.16-2. Redirection Record Types3-147 |
| 22 | Table 3.7.2.3.2.16-3. SYS_ORDERING3-148 |
| 23 | Table 3.7.2.3.2.20-1. Purpose of PACA Message3-160 |
| 24 | Table 3.7.2.3.2.20-2. Value of PACA State Timer3-161 |
| 25 | Table 3.7.2.3.2.21-1. Assignment Mode3-168 |
| 26 | Table 3.7.2.3.2.21-2. Default Configuration3-169 |
| 27 | Table 3.7.2.3.2.21-3. Radio Configurations3-172 |
| 28 | Table 3.7.2.3.2.21-4. Channel Indicator3-178 |
| 29 | Table 3.7.2.3.2.21-5. Pilot Record Types3-180 |
| 30 | Table 3.7.2.3.2.21-6. OTD Transmit Power Level3-181 |
| 31 | Table 3.7.2.3.2.22-1. Search Mode Field3-190 |

TABLES

| | | |
|----|--|-------|
| 1 | Table 3.7.2.3.2.22-2. Neighbor Configuration Field | 3-192 |
| 2 | Table 3.7.2.3.2.22-3. Search Priority Field | 3-193 |
| 3 | Table 3.7.2.3.2.22-4. Cellular System A/B | 3-195 |
| 4 | Table 3.7.2.3.2.22-5. Neighbor Pilot Record Types | 3-196 |
| 5 | Table 3.7.2.3.2.26-1. Paging Channel Data Rate | 3-204 |
| 6 | Table 3.7.3.3-1. f-dsch Messages (Part 1 of 2) | 3-213 |
| 7 | Table 3.7.3.3-1. f-dsch Messages (Part 2 of 2) | 3-214 |
| 8 | Table 3.7.3.3.2.6-1. Analog Channel Type | 3-222 |
| 9 | Table 3.7.3.3.2.17-1. Dedicated Traffic Channel Preamble Length | 3-244 |
| 10 | Table 3.7.3.3.2.18-1. REQ_PURPOSE Codes | 3-246 |
| 11 | Table 3.7.3.3.2.19-1. RESP_PURPOSE Codes | 3-248 |
| 12 | Table 3.7.3.3.2.25-1. Closed Loop Power Control Step Size | 3-268 |
| 13 | Table 3.7.3.3.2.25-2. Target Frame Error Rate | 3-270 |
| 14 | Table 3.7.3.3.2.25-3. RPC_ADJ_REC_TYPE and RPC_ADJ_REC_LEN fields | 3-274 |
| 15 | Table 3.7.2.3.2.25-4. Type Specific Fields for RECORD_TYPE = '0000' | 3-275 |
| 16 | Table 3.7.2.3.2.25-5. Type Specific Fields for RECORD_TYPE = '0001' | 3-277 |
| 17 | Table 3.7.2.3.2.25-6. Type Specific Fields for RECORD_TYPE = '0010' | 3-282 |
| 18 | Table 3.7.3.3.2.26-1. NGHBR_SRCH_MODE Field | 3-290 |
| 19 | Table 3.7.3.3.2.26-2. SEARCH_PRIORITY Field | 3-292 |
| 20 | Table 3.7.3.3.2.27-1. SEARCH_TYPE Codes | 3-296 |
| 21 | Table 3.7.3.3.2.27-2. SEARCH_MODE Types | 3-296 |
| 22 | Table 3.7.3.3.2.27-3. CF_NGHBR_SRCH_MODE Field | 3-301 |
| 23 | Table 3.7.3.3.2.32-1. Channel Indicator | 3-330 |
| 24 | Table 3.7.3.3.2.34-1. Channel Indicator | 3-333 |
| 25 | Table 3.7.3.3.2.34-2 Actual Reverse Pilot Gating rate | 3-334 |
| 26 | Table 3.7.3.3.2.35-1. Channel Indicator | 3-335 |
| 27 | Table 3.7.3.3.2.36-1. Channel Indicator | 3-353 |
| 28 | Table 3.7.3.3.2.37-2. REV_WALSH_ID Field | 3-369 |
| 29 | Table 3.7.3.3.2.37-1. SCH Data Rate | 3-370 |
| 30 | Table 3.7.3.3.2.37-3. FOR_SCH_DURATION and REV_SCH_DURATION Fields | 3-371 |
| 31 | Table 3.7.4-1. Order and Order Qualification Codes Used on the f-csch and the f-dsch | |

TABLES

| | | |
|----|--|-------|
| 1 | (Part 1 of 3) | 3-386 |
| 2 | Table 3.7.4-1. Order and Order Qualification Codes Used on the f-csch and the f-dsch | |
| 3 | (Part 2 of 3) | 3-387 |
| 4 | Table 3.7.4-1. Order and Order Qualification Codes Used on the f-csch and the f-dsch | |
| 5 | (Part 3 of 3) | 3-388 |
| 6 | Table 3.7.4.4-1. Status Request ORDQ Values | 3-392 |
| 7 | Table 3.7.5-1. Information Record Types (Part 1 of 3) | 3-397 |
| 8 | Table 3.7.5-1. Information Record Types (Part 2 of 3) | 3-398 |
| 9 | Table 3.7.5-1. Information Record Types (Part 3 of 3) | 3-399 |
| 10 | Table 3.7.5.5-1. Signal Type | 3-406 |
| 11 | Table 3.7.5.5-2. Alert Pitch | 3-407 |
| 12 | Table 3.7.5.5-3. Tone Signals (SIGNAL_TYPE = '00') | 3-408 |
| 13 | Table 3.7.5.5-4. ISDN Alerting (SIGNAL_TYPE = '01') | 3-409 |
| 14 | Table 3.7.5.5-5. IS-54B Alerting (SIGNAL_TYPE = '10') | 3-410 |
| 15 | Table 3.7.5.7-1. FOR_TRAFFIC Codes | 3-415 |
| 16 | Table 3.7.5.7-2. REV_TRAFFIC Codes | 3-416 |
| 17 | Table 3.7.5.7-3. DCCCH Frame Size | 3-418 |
| 18 | Table 3.7.5.7.1-1. Maximum Data Rate Values | 3-423 |
| 19 | Table 3.7.5.11-1. Redirection Reason | 3-429 |
| 20 | Table 3.7.5.16-1. Display Type | 3-435 |
| 21 | Table 3.7.5.16-2. Mandatory Control Tags and Display Text Tags | 3-436 |
| 22 | Table 3.7.5.19-1. Rejection Action Indicators | 3-440 |
| 23 | Table 3.7.5.20-1. Reverse Pilot Gating rate | 3-445 |
| 24 | Table 3.7.5.20-2. Logical Resource Identifier | 3-445 |
| 25 | Table 3.7.5.20-3. Physical Resource Identifier | 3-446 |
| 26 | Table D-1. Time Limits (Part 1 of 4) | D-1 |
| 27 | Table D-1. Time Limits (Part 2 of 4) | D-2 |
| 28 | Table D-1. Time Limits (Part 3 of 4) | D-3 |
| 29 | Table D-1. Time Limits (Part 4 of 4) | D-4 |
| 30 | Table D-2. Other Constants | D-5 |
| 31 | Table E-1. Retrievable and Settable Parameters (Part 1 of 10) | E-2 |
| 32 | Table E-1. Retrievable and Settable Parameters (Part 2 of 10) | E-3 |

TABLES

| | | |
|----|--|------|
| 1 | Table E-1. Retrievable and Settable Parameters (Part 3 of 10) | E-4 |
| 2 | Table E-1. Retrievable and Settable Parameters (Part 4 of 10) | E-5 |
| 3 | Table E-1. Retrievable and Settable Parameters (Part 5 of 10) | E-6 |
| 4 | Table E-1. Retrievable and Settable Parameters (Part 6 of 10) | E-7 |
| 5 | Table E-1. Retrievable and Settable Parameters (Part 7 of 10) | E-8 |
| 6 | Table E-1. Retrievable and Settable Parameters (Part 8 of 10) | E-9 |
| 7 | Table E-1. Retrievable and Settable Parameters (Part 9 of 10) | E-10 |
| 8 | Table E-1. Retrievable and Settable Parameters (Part 10 of 10) | E-11 |
| 9 | Table F.2.1-1. Permanent Mobile Station Indicators | F-2 |
| 10 | Table F.2.2-1. CDMA Semi-permanent Mobile Station Indicators | F-3 |
| 11 | Table F.3-1. NAM Indicators (Part 1 of 2) | F-4 |
| 12 | Table F.3-1. NAM Indicators (Part 2 of 2) | F-5 |
| 13 | | |

FOREWORD

1 **1. General.** This section defines the terms and numeric indications used in this
2 document. This section also describes the time reference used in the CDMA system and
3 the tolerances used throughout the document.

4 **2. Requirements for Mobile Station CDMA Operation.** This section describes the
5 requirements for CDMA-analog dual-mode mobile stations operating in the CDMA mode.
6 A mobile station complying with these requirements will be able to operate with CDMA
7 base stations complying with this document.

8 **3. Requirements for Base Station CDMA Operation.** This section describes the
9 requirements for CDMA base stations. A base station complying with these requirements
10 will be able to operate in the CDMA mode with mobile stations complying with this
11 document.

12 **Annex A. Reserved.**

13 **Annex B. CDMA Call Flow Examples.** This informative annex provides examples of
14 simple call flows in the CDMA system.

15 **Annex C. Reserved.**

16 **Annex D. CDMA Constants.** This normative annex contains tables that give specific
17 values for the constant identifiers found in Section 2 and Section 3.

18 **Annex E. CDMA Retrievable and Settable Parameters.** This normative annex describes
19 the mobile station parameters that the base station can set and retrieve.

20 **Annex F. Mobile Station Database.** This informative annex describes a database model
21 that can be used for dual-mode mobile stations complying with this document.

NOTES

1. Compatibility, as used in connection with this standard, is understood to mean:
Any mobile station is able to place and receive calls in any 800 MHz cellular system or 1.8 to 2.0 GHz CDMA PCS system. Conversely all systems are able to place and receive calls for any mobile station.
2. The term "dual-mode mobile station" indicates a mobile station capable of both analog (FM) and spread spectrum (CDMA) operation.
3. This compatibility specification is based on the specific United States spectrum allocation for cellular and PCS systems.
4. Each mobile station is assigned a single unique 32-bit binary serial number (ESN) that cannot be changed by the subscriber without rendering the mobile station inoperative (see 2.3.2).
5. "Base station" refers to the functions performed in the fixed network. These functions typically distributed among cells, sectors, and mobile switching centers.
6. This standard uses the following verbal forms: "Shall" and "shall not" identify requirements strictly to be followed in order to conform with the standard and from which no deviation is permitted. "Should" and "should not" indicate that one of several possibilities is recommended as particularly suitable, without mentioning or excluding others; that a certain course of action is preferred but not necessarily required; or that (in the negative form) a certain possibility or course of action is discouraged but not prohibited. "May" and "need not" indicate a course of action permissible within the limits of the standard. "Can" and "cannot" are used for statements of possibility and capability, whether material, physical, or causal.
7. Footnotes appear at various points in this specification to elaborate and further clarify items discussed in the body of the specification.
8. Unless indicated otherwise, this document presents numbers in decimal form. Binary numbers are distinguished in the text by the use of single quotation marks.
9. The following operators define mathematical operations:
 - \times indicates multiplication.
 - $\lfloor x \rfloor$ indicates the largest integer less than or equal to x : $\lfloor 1.1 \rfloor = 1$, $\lfloor 1.0 \rfloor = 1$.
 - $\lceil x \rceil$ indicates the smallest integer greater or equal to x : $\lceil 1.1 \rceil = 2$, $\lceil 2.0 \rceil = 2$.
 - $|x|$ indicates the absolute value of x : $|-17| = 17$, $|17| = 17$.
 - \oplus indicates exclusive OR (modulo-2 addition).
 - $\min(x, y)$ indicates the minimum of x and y .
 - $\max(x, y)$ indicates the maximum of x and y .
 - $x \bmod y$ indicates the remainder after dividing x by y : $x \bmod y = x - (y \times \lfloor x/y \rfloor)$.

NOTES

- 1 10. While communication between Layer 3 and Resource Control and between Layer 3
2 and Layer 2 is specified, there is no requirement to implement layering.

REFERENCES

The following standards contain provisions which, through reference in this text, constitute provisions of this Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. ANSI and TIA maintain registers of currently valid national standards published by them.

—*American National Standards:*

1. ANSI/EIA/TIA-691, ANSI Enhanced Analog IS-691, date pending.
2. ANSI T1.607-1990, Integrated Services Digital Network (ISDN)–Layer 3 Signaling Specification for Circuit Switched Bearer Service for Digital Subscriber Signaling System Number 1 (DSS1), July 1990.
3. ANSI T1.610-1994, Generic Procedures for the Control of ISDN Supplementary Services, August, 1994.
4. ANSI J-STD-018, Recommended Minimum Performance Requirements for 1.8 to 2.0 GHz Code Division Multiple Access (CDMA) Personal Stations.
5. ANSI J-STD-019, Recommended Minimum Performance Requirements for Base Stations Supporting 1.8 to 2.0 GHz Code Division Multiple Access (CDMA) Personal Stations.
6. ANSI X3.4-1986, Coded Character Set - 7-bit American National Standard Code for Information Interchange, 1992.
7. TIA/EIA-97-C, Recommended Minimum Performance Standards for Base Stations Supporting Dual-Mode Spread Spectrum Mobile Stations, date pending.
8. TIA/EIA-98-C, Recommended Minimum Performance Standards for Dual-Mode Spread Spectrum Mobile Stations, date pending.
9. TIA/EIA-553-A, Core Analog Standard 800 MHz Mobile Station - Land Station Compatibility Specification with Authentication, date pending.
10. TIA/EIA-41-D, Cellular Radiotelecommunications Intersystem Operations, December 1997.
11. TIA/EIA-637-A, Short Message Services for Spread Spectrum Cellular Systems.

—*Other Standards:*

12. Common Cryptographic Algorithms, Revision C, 1997. An EAR-controlled document subject to restricted distribution. Contact the Telecommunications Industry Association, Arlington, VA.
13. ITU-T Recommendation E.163, Numbering Plan for the International Telephone Service, 1988. Note: merged with E.164.
14. ITU-T Recommendation E.164 (I.331), Numbering Plan for the ISDN Era, 1991.

REFERENCES

- 1 15. ITU-T Recommendation E.212, Identification Plan for Land Mobile Stations, 1988.
- 2 16. ITU-T Recommendation F.69, The International Telex Service-Service and
3 Operational Provisions of Telex Destination Codes and Telex Network
4 Identifications Codes, 1994.
- 5 17. ITU-T Recommendation G.162, Characteristics of Compandors for Telephony.
- 6 18. ITU-T Recommendation X.121, International Numbering Plan for Public Data
7 Networks, 1992.
- 8 19. EIA/TIA/IS-54-B, Cellular System Dual-Mode Mobile Station - Base Station
9 Compatibility Standard, April 1992.
- 10 20. IEEE Standard 661-1979, Method for Determining Objective Loudness Ratings of
11 Telephone Connections, 1979.
- 12 21. Interface Specification for Common Cryptographic Algorithms, Rev C, 1997.
13 Contact the Telecommunications Industry Association, Arlington, VA.
- 14 22. TIA/EIA/IS-91, Mobile Station-Base Station Compatibility Standard for 800 MHz
15 Analog Cellular, October 1994.
- 16 23. TIA/EIA/IS-125, Recommended Minimum Performance Standard for Digital
17 Cellular Spread Spectrum Speech Service Option 1, May 1995.
- 18 24. TIA/EIA/IS-136, 800 MHz TDMA Cellular-Radio Interface-Mobile Station-Base
19 Station Compatibility, December 1994.
- 20 25. TIA/EIA/IS-683-A, Over-the-Air Service Provisioning of Mobile Stations in Spread
21 Spectrum Systems, June 1998.
- 22 26. TIA/EIA/IS-735, Enhancements to TIA/EIA-41-D & TIA/EIA-664 for Advanced
23 Features in Wideband Spread Spectrum Systems, January 1998.
- 24 27. TSB16, Assignment of Access Overload Classes in the Cellular
25 Telecommunications Services, March 1985.
- 26 28. TSB29-C, International Implementation of Wireless Telecommunication Systems
27 Compliant with TIA/EIA-41, date pending.
- 28 29. TSB39-A, Message Type Assignments for the Extended Protocol Facility of
29 ANSI/EIA/TIA-553, EIA/TIA/IS-54, TIA/EIA/IS-88 and TIA/EIA/IS-95, October
30 1994.
- 31 30. TSB50, User Interface for Authentication Key Entry, March 1993.
- 32 31. TSB58-A, Administration of Parameter Value Assignments for TIA/EIA Wideband
33 Spread Spectrum Standards.

1. GENERAL

1.1 Terms and Numeric Information

1.1.1 Terms

Abbreviated Alert. An abbreviated alert is used to remind the mobile station user that previously selected alternative routing features are still active.

AC. See Authentication Center.

Access Attempt. The entire process of sending one message and receiving (or failing to receive) an acknowledgment for that message, consisting of one or more access sub-attempts. See also Access Probe, Access Probe Sequence, and Access Sub-attempt.

Access Channel. A Reverse CDMA Channel used by mobile stations for communicating to the base station. The Access Channel is used for short signaling message exchanges such as call originations, responses to pages, and registrations. The Access Channel is a slotted random access channel.

Access Channel Message. The information part of an access probe consisting of the message body, length field, and CRC.

Access Channel Message Capsule. An Access Channel message plus the padding.

Access Channel Preamble. The preamble of an access probe consisting of a sequence of all-zero frames that are sent at the 4800 bps rate.

Access Channel Request Message. An Access Channel message that is autonomously generated by the mobile station. See also Access Channel Response Message.

Access Channel Response Message. A message on the Access Channel generated to reply to a message received from the base station.

Access Channel Slot. The assigned time interval for an access probe. An Access Channel slot consists of an integer number of frames. The transmission of an access probe is performed within the boundaries of an Access Channel slot.

Access Entry Handoff. The act of transferring reception of the Paging Channel from one base station to another, when the mobile station is transitioning from the *Mobile Station Idle State* to the *System Access State*.

Access Handoff. The act of transferring reception of the Paging Channel from one base station to another, when the mobile station is in the *System Access State* after an Access Attempt.

Access Overload Class. See Overload Class.

Access Probe. One Access Channel transmission consisting of a preamble and a message. The transmission is an integer number of frames in length and transmits one Access Channel message. See also Access Probe Sequence, Access Sub-attempt, and Access Attempt.

1 **Access Probe Handoff.** A handoff that occurs while the mobile station is performing an
2 Access Attempt in the System Access State.

3 **Access Probe Sequence.** A sequence of one or more access probes on the Access
4 Channel. Other than the reported pilot information, the same Access Channel message
5 content is transmitted in every access probe of an access sub-attempt. See also Access
6 Probe, Access Sub-attempt, and Access Attempt.

7 **Access Sub-attempt.** A sequence of one or more access probe sequences on the Access
8 Channel transmitted to one pilot, containing the same message content other than the
9 reported pilot information. See also Access Probe, Access Probe Sequence, and Access
10 Attempt.

11 **Acknowledgment.** A Layer 2 response by the mobile station or the base station
12 confirming that a signaling message was received correctly.

13 **Action Time.** The time at which the action implied by a message should take effect.

14 **Active Set.** The set of pilots associated with the CDMA Channels containing Forward
15 Traffic Channels assigned to a particular mobile station.

16 **Active User Zone.** A user zone in which the mobile station makes its presence known via
17 an explicit registration in order to activate tiered service features. See also CDMA Tiered
18 Services, User Zone, and Passive User Zone.

19 **Aging.** A mechanism through which the mobile station maintains in its Neighbor Set the
20 pilots that have been recently sent to it from the base station and the pilots whose handoff
21 drop timers have recently expired.

22 **A-key.** A secret, 64-bit pattern stored in the mobile station and HLR/AC. It is used to
23 generate/update the mobile station's Shared Secret Data.

24 **Assured Mode.** Mode of delivery that guarantees that a PDU will be delivered to the peer.
25 A PDU sent in assured mode is retransmitted by the LAC sublayer, up to a maximum
26 number of retransmissions, until the LAC entity at the sender receives an
27 acknowledgement for the PDU. See also Confirmation of Delivery.

28 **Authentication.** A procedure used by a base station to validate a mobile station's
29 identity.

30 **Authentication Center (AC).** An entity that manages the authentication information
31 related to the mobile station.

32 **Authentication Response (AUTHR).** An 18-bit output of the authentication algorithm. It
33 is used, for example, to validate mobile station registrations, originations and
34 terminations.

35 **Autonomous Registration.** A method of registration in which the mobile station registers
36 without an explicit command from the base station.

37 **Auxiliary Pilot Channel.** A non-data-bearing, direct-sequence spread spectrum signal
38 optionally transmitted by a CDMA base station.

- 1 **Auxiliary Transmit Diversity Pilot Channel.** A pilot channel, counterpart to an Auxiliary
2 Pilot Channel, that is transmitted by a CDMA base station from the non-primary antenna
3 when orthogonal transmit diversity is employed.
- 4 **Bad Frames.** Frames classified as insufficient frame quality or as 9600 bps primary traffic
5 only, with bit errors. See also Good Frames.
- 6 **Band Class.** A set of CDMA frequency assignments and a numbering scheme for these
7 channels. See also CDMA Frequency Assignment.
- 8 **Base Station.** A fixed station used for communicating with mobile stations. Depending
9 upon the context, the term base station may refer to a cell, a sector within a cell, an MSC,
10 or other part of the cellular system. See also MSC.
- 11 **Base Station Authentication Response (AUTHBS).** An 18-bit pattern generated by the
12 authentication algorithm. AUTHBS is used to confirm the validity of base station orders to
13 update the Shared Secret Data.
- 14 **Base Station Random Variable (RANDBS).** A 32-bit random number generated by the
15 mobile station for authenticating base station orders to update the Shared Secret Data.
- 16 **Blank-and-Burst.** The preemption of an entire Traffic Channel frame's primary traffic by
17 signaling traffic or secondary traffic. Blank-and-burst is performed on a frame-by-frame
18 basis.
- 19 **BLOB.** Block of Bits.
- 20 **bps.** Bits per second.
- 21 **Broadcast User Zone.** A user zone that is identified to the mobile station by means of
22 broadcast messages. It corresponds to the RF coverage area of a particular set of cells and
23 sectors. See also CDMA Tiered Services and Mobile-Specific User Zone.
- 24 **Call Disconnect.** The process that releases the resources handling a particular call. The
25 disconnect process begins either when the mobile station user indicates the end of the call
26 by generating an on-hook condition or other call-release mechanism, or when the base
27 station initiates a release.
- 28 **Call History Parameter (COUNT).** A modulo-64 event counter maintained by the mobile
29 station and Authentication Center that is used for clone detection.
- 30 **Candidate Frequency.** The frequency, either analog or CDMA, for which the base station
31 specifies a search set, using a *Candidate Frequency Search Request Message*.
- 32 **Candidate Set.** The set of pilots that have been received with sufficient strength by the
33 mobile station to be successfully demodulated, but have not been placed in the Active Set
34 by the base station. See also Active Set, Neighbor Set, and Remaining Set.
- 35 **CDMA.** See Code Division Multiple Access.
- 36 **CDMA Candidate Frequency.** The Candidate Frequency specified for a search of CDMA
37 pilots.

1 **CDMA Channel.** The set of channels transmitted between the base station and the mobile
2 stations within a given CDMA Frequency Assignment. See also Forward CDMA Channel
3 and Reverse CDMA Channel.

4 **CDMA Channel Number.** An 11-bit number that identifies a CDMA Frequency
5 Assignment.

6 **CDMA Frequency Assignment.** A particular choice of RF band center frequencies for the
7 Forward CDMA Channel and Reverse CDMA Channel that comprise a CDMA Channel.
8 CDMA Frequency Assignments are identified by CDMA Channel Numbers.

9 **CDMA Preferred Set.** The set of CDMA channel numbers in a CDMA system
10 corresponding to Frequency Assignments that a mobile station will normally search to
11 acquire a CDMA Pilot Channel. For CDMA cellular systems, the primary and secondary
12 channels comprise the CDMA Preferred Set.

13 **CDMA Tiered Services.** System features and services that are based on location,
14 potentially including private networks. User zones establish the availability of services.
15 See also User Zone, Broadcast User Zone, Mobile-Specific User Zone, Active User Zone,
16 and Passive User Zone.

17 **Chip.** See PN Chip.

18 **Code Channel.** A subchannel of a Forward CDMA Channel. A Forward CDMA Channel
19 contains 64 code channels. Code channel zero is assigned to the Pilot Channel. Code
20 channels 1 through 7 may be assigned to either the Paging Channels or the Traffic
21 Channels. Code channel 32 may be assigned to either a Sync Channel or a Traffic
22 Channel. The remaining code channels may be assigned to Traffic Channels.

23 **Code Division Multiple Access (CDMA).** A technique for spread-spectrum multiple-
24 access digital communications that creates channels through the use of unique code
25 sequences.

26 **Code Symbol.** The output of an error-correcting encoder. Information bits are input to
27 the encoder and code symbols are output from the encoder. See Convolutional Code.

28 **Configuration Change Indicator.** A one-bit datum, sent on the Quick Paging Channel.
29 Appearance of the Configuration Change Indicator in the Quick Paging Channel serves to
30 alert a slotted mode mobile station, operating in the idle state, that, after performing an
31 idle handoff, it should monitor the Paging Channel, in order to determine if it should
32 update its stored parameters.

33 **Confirmation of Delivery.** A notification sent by the LAC sublayer to Layer 3 at the
34 sender, when the LAC entity at the sender receives the acknowledgment for a specific PDU
35 sent in assured mode.

36 **Convolutional Code.** A type of error-correcting code. A code symbol can be considered as
37 modulo 2 the convolution of the input data sequence with the impulse response of a
38 generator function.

39 **CRC.** See Cyclic Redundancy Code.

- 1 **Cyclic Redundancy Code (CRC).** A class of linear error detecting codes that generate
2 parity check bits by finding the remainder of a polynomial division. See also Frame
3 Quality Indicator.
- 4 **dBc.** The ratio (in dB) of the sideband power of a signal, measured in a given bandwidth at
5 a given frequency offset from the center frequency of the same signal, to the total inband
6 power of the signal.
- 7 **dBm.** A measure of power expressed in terms of its ratio (in dB) to one milliwatt.
- 8 **dBm/Hz.** A measure of power spectral density. The ratio, dBm/Hz, is the power in one
9 Hertz of bandwidth, where power is expressed in units of dBm.
- 10 **dBW.** A measure of power expressed in terms of its ratio (in dB) to one Watt.
- 11 **Dedicated Control Channel.** A portion of a Traffic Channel (Forward or Reverse) that
12 carries a combination of user data, signaling, and power control information.
- 13 **Deinterleaving.** The process of unpermuting the symbols that were permuted by the
14 interleaver. Deinterleaving is performed on received symbols prior to decoding.
- 15 **Discontinuous Transmission (DTX).** A mode of operation in which a base station or a
16 mobile station switches on and off its transmitter on a particular code channel
17 autonomously. For the case of DTX operation on the Forward Dedicated Control Channel,
18 the Forward Power Control Subchannel is still transmitted.
- 19 **Distance-Based Registration.** An autonomous registration method in which the mobile
20 station registers whenever it enters a cell whose distance from the cell in which the mobile
21 station last registered exceeds a given threshold.
- 22 **DTMF.** See Dual-Tone Multifrequency.
- 23 **Dual-Tone Multifrequency (DTMF).** Signaling by the simultaneous transmission of two
24 tones, one from a group of low frequencies and another from a group of high frequencies.
25 Each group of frequencies consists of four frequencies.
- 26 **E_b .** A measure of the energy in a signal, at some point in a communication system, per
27 information bit conveyed by that signal, or an average value of such energies. Its relevance
28 to system performance is most often expressed by its ratio to additive noise and
29 interference, such as in E_b/N_0 or E_b/I_0 . Such ratios are dimensionless, and are usually
30 expressed in dB units.
- 31 **E_c/I_0 .** A notation used to represent a dimensionless ratio of the average power of some
32 code-distinguished CDMA signal channel, typically a pilot, to the total power comprised of
33 signal plus interference, within the signal bandwidth. It is usually expressed in dB units.
- 34 **Effective Radiated Power (ERP).** The product of the power supplied to the antenna and
35 its gain relative to a half-wave dipole in a given direction.
- 36 **EIRP.** See Equivalent Isotropic Radiated Power.
- 37 **Electronic Serial Number (ESN).** A 32-bit number assigned by the mobile station
38 manufacturer, uniquely identifying the mobile station equipment.

1 **Encoder Tail Bits.** A fixed sequence of bits added to the end of a block of data to reset the
2 convolutional encoder to a known state.

3 **Equivalent Isotropically Radiated Power (EIRP).** The product of the power supplied to
4 the antenna and the antenna gain in a direction relative to an isotropic antenna.

5 **Erasure Indicator Bit.** A bit used in the Rate Set 2 Reverse Traffic Channel frame
6 structure to indicate an erased Forward Fundamental Code Channel or Forward Dedicated
7 Control Channel frame.

8 **ERP.** See Effective Radiated Power.

9 **ESN.** See Electronic Serial Number.

10 **f-csch.** Forward common signaling logical channel.

11 **f-dsch.** Forward dedicated signaling logical channel.

12 **Fade Timer.** A timer kept by the mobile station as a measure of Forward Traffic Channel
13 continuity. If the fade timer expires, the mobile station drops the call.

14 **Flash.** An indication sent on the Reverse CDMA Channel indicating that the user directed
15 the mobile station to invoke special processing.

16 **Foreign NID Roamer.** A mobile station operating in the same system (SID) but in a
17 different network (NID) from the one in which service was subscribed. See also Foreign
18 SID Roamer and Roamer.

19 **Foreign SID Roamer.** A mobile station operating in a system (SID) other than the one
20 from which service was subscribed. See also Foreign NID Roamer and Roamer.

21 **Forward CDMA Channel.** A CDMA Channel from a base station to mobile stations. The
22 Forward CDMA Channel contains one or more code channels that are transmitted on a
23 CDMA Frequency Assignment using a particular pilot PN offset. The code channels are
24 associated with the Pilot Channel, Sync Channel, Paging Channels, and Traffic Channels.
25 The Forward CDMA Channel always carries a Pilot Channel and may carry up to one Sync
26 Channel, up to seven Paging Channels, and up to 63 Traffic Channels, as long as the total
27 number of channels, including the Pilot Channel, is no greater than 64.

28 **Forward Dedicated Control Channel.** A Dedicated Control Channel that is transmitted
29 on the Forward CDMA Channel.

30 **Forward Fundamental Channel.** A Fundamental Channel that is transmitted on the
31 Forward CDMA Channel.

32 **Forward Pilot Channel.** A non-data-bearing direct-sequence spread spectrum signal
33 transmitted continuously by each CDMA base station. The Forward Pilot Channel allows a
34 mobile station to acquire the timing of the Forward CDMA Channel, provides a phase
35 reference for coherent demodulation, and provides a means for signal strength
36 comparisons between base stations for determining when to handoff. Different base
37 stations are identified by different pilot PN sequence time phases. See also Pilot PN
38 Sequence, Pilot PN Sequence Offset.

39 **Forward Supplemental Channel.** A Supplemental Channel that is transmitted on the
40 Forward CDMA Channel.

- 1 **Forward Supplemental Code Channel.** A Supplemental Code Channel that is
2 transmitted on the Forward CDMA Channel.
- 3 **Forward Traffic Channel.** One or more code channels used to transport user and
4 signaling traffic from the base station to the mobile station. See Forward Fundamental
5 Code Channel, Forward Dedicated Control Channel, Forward Fundamental Channel,
6 Forward Supplemental, and Forward Supplemental Code Channel.
- 7 **Forward Transmit Diversity Pilot Channel.** A pilot channel transmitted by a CDMA base
8 station from the non-primary antenna when orthogonal transmit diversity is employed.
- 9 **Frame.** A basic timing interval in the system. For the Access Channel, Paging Channel,
10 Forward Supplemental Channel, Forward Supplemental Code Channel, Reverse
11 Supplemental Channel, and Reverse Supplemental Code Channel, a frame is 20 ms long.
12 For the Sync Channel, a frame is 26.666... ms long. For the Forward Fundamental
13 Channel, Forward Dedicated Control Channel, Reverse Fundamental Channel, and
14 Reverse Dedicated Control Channel, a frame is 5 or 20 ms long.
- 15 **Frame Category.** A classification of a received Traffic Channel frame based upon
16 transmission data rate, the frame contents (primary traffic, secondary traffic, or signaling
17 traffic), and whether there are detected errors in the frame.
- 18 **Frame Offset.** A time skewing of Traffic Channel frames from System Time in integer
19 multiples of 1.25 ms. The maximum frame offset is 18.75 ms.
- 20 **Frame Quality Indicator.** The CRC check applied to 9.6 and 4.8 kbps Traffic Channel
21 frames (for Rate Set 1) and 14.4, 7.2, 3.6 and 1.8 kbps Traffic Channel frames (for Rate Set
22 2).
- 23 **Full TMSI.** The combination of TMSI_ZONE and TMSI_CODE. The full TMSI is a globally
24 unique address for the mobile station.
- 25 **Fundamental Channel.** A portion of a Traffic Channel that can carry a combination of
26 primary data, secondary data, signaling, and power control information.
- 27 **Gating Rate Set.** This specifies the set of supported reverse pilot gating rates. The base
28 station and the mobile station may support one or more gating rates.
- 29 **GHz.** Gigahertz (10^9 Hertz).
- 30 **Global Positioning System (GPS).** A US government satellite system that provides
31 location and time information to users. See Navstar GPS Space Segment / Navigation User
32 Interfaces ICD-GPS-200 for specifications.
- 33 **Good Frames.** Frames not classified as bad frames. See also Bad Frames.
- 34 **GPS.** See Global Positioning System.
- 35 **Handoff.** The act of transferring communication with a mobile station from one base
36 station to another.
- 37 **Hard Handoff.** A handoff characterized by a temporary disconnection of the Traffic
38 Channel. Hard handoffs occur when the mobile station is transferred between disjoint
39 Active Sets, when the CDMA Frequency Assignment changes, when the frame offset

1 changes, or when the mobile station is directed from a CDMA Traffic Channel to an analog
2 voice channel. See also Soft Handoff.

3 **Hash Function.** A function used by the mobile station to select one out of N available
4 resources. The hash function distributes the available resources uniformly among a
5 random sample of mobile stations.

6 **HLR.** See Home Location Register.

7 **Home Location Register (HLR).** The location register to which a MIN/IMSI is assigned for
8 record purposes such as subscriber information.

9 **Home System.** The cellular or PCS system in which the mobile station subscribes for
10 service.

11 **Hopping Pilot Beacon.** A pilot beacon that changes CDMA Frequency periodically to
12 simulate multiple base stations operating on different frequencies. The transmission of
13 the hopping pilot beacon is discontinuous on any CDMA Channel.

14 **Idle Handoff.** The act of transferring reception of the Paging Channel from one base
15 station to another, when the mobile station is in the *Mobile Station Idle State*.

16 **Implicit Registration.** A registration achieved by a successful transmission of an
17 origination or page response on the Access Channel.

18 **IMSI.** See International Mobile Station Identity.

19 **IMSI_M.** MIN-based IMSI using the lower 10 digits to store the MIN.

20 **IMSI_O.** Operational value of IMSI used by the mobile station for operation with the base
21 station.

22 **IMSI_T.** True IMSI not associated with MIN. This could be 15 digits or fewer.

23 **Interleaving.** The process of permuting a sequence of symbols.

24 **International Mobile Station Identity (IMSI).** A method of identifying stations in the
25 land mobile service as specified in ITU-T Recommendation E.212.

26 **kHz.** Kilohertz (10^3 Hertz).

27 **ksps.** Kilo-symbols per second (10^3 symbols per second).

28 **Layering.** A method of organization for communication protocols in which the transmitted
29 or received information is transferred in pipeline fashion, within each station, in well-
30 defined encapsulated data units between otherwise decoupled processing entities
31 ("layers"). A layer is defined in terms of its communication protocol to a peer layer in
32 another entity and the services it offers to the next higher layer in its own entity.

33 **Layer 1.** Layer 1 provides for the transmission and reception of radio signals between the
34 base station and the mobile station. Also see Physical Layer.

35 **Layer 2.** Layer 2 provides for the correct transmission and reception of signaling
36 messages, including partial duplicate detection. Layer 2 makes use of the services
37 provided by Layer 1. See also Layering and Layer 3.

38 **Layer 3.** Layer 3 provides the control messaging for the cellular or PCS telephone system.

- 1 Layer 3 originates and terminates signaling messages according to the semantics and
2 timing of the communication protocol between the base station and the mobile station.
3 Layer 3 makes use of the services provided by Layer 2. See also Layering and Layer 2.
- 4 **Local Control.** An optional mobile station feature used to perform manufacturer-specific
5 functions.
- 6 **Logical Channel.** A communication path between the mobile station and the base station,
7 described in terms of the intended use of, and access to, the transferred data, and
8 direction of transfer. A logical channel can be "mapped" to and from one or more physical
9 channels.
- 10 **Logical-to-physical Mapping.** The technique for forming associations between logical and
11 physical channels.
- 12 **Long Code.** A PN sequence with period $2^{42} - 1$ that is used for scrambling on the Forward
13 CDMA Channel and spreading on the Reverse CDMA Channel. The long code uniquely
14 identifies a mobile station on both the Reverse Traffic Channel and the Forward Traffic
15 Channel. The long code provides limited privacy. The long code also separates multiple
16 Access Channels on the same CDMA Channel. See also Public Long Code and Private
17 Long Code.
- 18 **Long Code Mask.** A 42-bit binary number that creates the unique identity of the long
19 code. See also Public Long Code, Private Long Code, Public Long Code Mask, and Private
20 Long Code Mask.
- 21 **LSB.** Least significant bit.
- 22 **Maximal Length Sequence (m-Sequence).** A binary sequence of period $2^n - 1$, n being a
23 positive integer, with no internal periodicities. A maximal length sequence can be
24 generated by a tapped n -bit shift register with linear feedback.
- 25 **MCC.** See Mobile Country Code.
- 26 **Mcps.** Megachips per second (10^6 chips per second).
- 27 **MCSB.** See Message Control and Status Block.
- 28 **Mean Input Power.** The total received calorimetric power measured in a specified
29 bandwidth at the antenna connector, including all internal and external signal and noise
30 sources.
- 31 **Mean Output Power.** The total transmitted calorimetric power measured in a specified
32 bandwidth at the antenna connector when the transmitter is active.
- 33 **Message.** A data structure that conveys control information or application information. A
34 message consists of a length field (MSG_LENGTH), a message body (the part conveying the
35 information), and a CRC.
- 36 **Message Body.** The part of the message contained between the length field
37 (MSG_LENGTH) and the CRC field.
- 38 **Message Capsule.** A sequence of bits comprising a single message and padding. The
39 padding always follows the message and may be of zero length.

1 **Message Control and Status Block.** In this document, a parameter block representing
2 the PCI being transferred between Layer 3 and Layer 2.

3 **Message CRC.** The CRC check associated with a message. See also Cyclic Redundancy
4 Code.

5 **Message Field.** A basic named element in a message. A message field may consist of zero
6 or more bits.

7 **Message Record.** An entry in a message consisting of one or more fields that repeats in
8 the message.

9 **MHz.** Megahertz (10^6 Hertz).

10 **MIN.** See Mobile Identification Number.

11 **MNC.** See Mobile Network Code.

12 **Mobile Country Code (MCC).** A part of the E.212 IMSI identifying the home country. See
13 ITU-T Recommendation E.212.

14 **Mobile Directory Number.** A dialable directory number that is not necessarily the same
15 as the mobile station's air interface identification, i.e., MIN, IMSI_M or IMSI_T.

16 **Mobile Identification Number (MIN).** The 34-bit number that is a digital representation
17 of the 10-digit number assigned to a mobile station.

18 **Mobile Network Code (MNC).** A part of the E.212 IMSI identifying the home network
19 within the home country. See ITU-T Recommendation E.212.

20 **Mobile Protocol Capability Indicator (MPCI).** A 2-bit field used to indicate the mobile
21 station's capabilities.

22 **Mobile-Specific User Zone.** A user zone that is identified by the mobile station. The
23 mobile station may consider parameters such as the identity of the serving system, cell,
24 and sector, and the geographic location of that station in making the determination. See
25 also CDMA Tiered Services, User Zone, Broadcast User Zone, Active User Zone, and
26 Passive User Zone.

27 **Mobile Station.** A station in the Public Cellular Radio Telecommunications Service
28 intended to be used while in motion or during halts at unspecified points. Mobile stations
29 include portable units (e.g., hand-held personal units) and units installed in vehicles.

30 **Mobile Station Class.** A classification of mobile stations based on characteristics such as
31 slotted operation and transmission power. See Table 2.3.3-1 of TIA/EIA-553-A and Table
32 2.3.3-1 of this document.

33 **Mobile Station Identification Number (MSIN).** A part of the E.212 IMSI identifying the
34 mobile station within its home network. See ITU-T Recommendation E.212.

35 **Mobile Station Originated Call.** A call originating from a mobile station.

36 **Mobile Station Terminated Call.** A call received by a mobile station (not to be confused
37 with a disconnect or call release).

38 **ms.** Millisecond (10^{-3} second).

- 1 **MSB.** Most significant bit.
- 2 **MSC.** See Mobile Switching Center.
- 3 **MSIN.** See Mobile Station Identification Number.
- 4 **Multiplex Option.** The ability of the multiplex sublayer and lower layers to be tailored to
 5 provide special capabilities. A multiplex option defines such characteristics as the frame
 6 format, the maximum number of Supplemental Code Channels supported, and the rate
 7 decision rules. See also Multiplex Sublayer.
- 8 **Multiplex Sublayer.** One of the conceptual layers of the system that multiplexes and
 9 demultiplexes primary traffic, secondary traffic, and signaling traffic.
- 10 **NAM.** See Number Assignment Module.
- 11 **National Mobile Station Identity (NMSI).** A part of the E.212 IMSI identifying the mobile
 12 station within its home country. The NMSI consists of the MNC and the MSIN. See ITU-T
 13 Recommendation E.212.
- 14 **NDSS.** See Network Directed System Selection.
- 15 **Neighbor Set.** The set of pilots associated with the CDMA Channels that are probable
 16 candidates for handoff. Normally, the Neighbor Set consists of the pilots associated with
 17 CDMA Channels that cover geographical areas near the mobile station. See also Active
 18 Set, Candidate Set, Remaining Set, and Private Neighbor Set.
- 19 **Network.** A network is a subset of a cellular or PCS system, such as an area-wide cellular
 20 network, a private group of base stations, or a group of base stations set up to handle a
 21 special requirement. A network can be as small or as large as needed, as long as it is fully
 22 contained within a system. See also System.
- 23 **Network Directed System Selection (NDSS).** A feature that allows the mobile station to
 24 automatically register with a preferred system while roaming, or to be automatically
 25 directed by a service provider, typically the home service provider, to a suggested system,
 26 regardless of the frequency band class, cellular band, or PCS frequency block.
- 27 **Network Identification (NID).** A number that uniquely identifies a network within a
 28 cellular or PCS system. See also System Identification.
- 29 **NID.** See Network Identification.
- 30 **NMSI.** See National Mobile Station Identity.
- 31 **Non-Autonomous Registration.** A registration method in which the base station initiates
 32 registration. See also Autonomous Registration.
- 33 **Non-Slotted Mode.** An operation mode of the mobile station in which the mobile station
 34 continuously monitors the Paging Channel.
- 35 **ns.** Nanosecond (10^{-9} second).
- 36 **NULL.** Any value that is not in the specified range of a field.
- 37 **Null Traffic Channel Data.** One or more frames of a specified data sequence sent at the
 38 lowest agreed-upon rate of the negotiated rate set. Null Traffic Channel data may be sent

1 when there is no primary, secondary, or signaling traffic available. Null Traffic Channel
2 data serves to maintain the connectivity between the mobile station and the base station.

3 **Number Assignment Module (NAM).** A set of MIN/IMSI-related parameters stored in the
4 mobile station.

5 **Numeric Information.** Numeric information consists of parameters that appear as
6 numeric fields in messages exchanged by the base station and the mobile station and
7 information used to describe the operation of the mobile station.

8 **Optional Field.** A field defined within a message structure that is optionally transmitted
9 to the message recipient.

10 **Order.** A type of message that contains control codes for either the mobile station or the
11 base station.

12 **Ordered Registration.** A registration method in which the base station orders the mobile
13 station to send registration related parameters.

14 **Orthogonal Transmit Diversity (OTD).** An optional method of transmission of the
15 Forward CDMA Channel that uses two antennas, each transmitting a fraction of the code
16 symbols. It can be used to enhance performance in the presence of multipath fading radio
17 propagation.

18 **OTD.** See Orthogonal Transmit Diversity

19 **Overhead Message.** A message sent by the base station on the Paging Channel to
20 communicate base-station-specific and system-wide information to mobile stations.

21 **Overload Class (OLC).** The means used to control system access by mobile stations,
22 typically in emergency or other overloaded conditions. Mobile stations are assigned one
23 (or more) of sixteen overload classes. Access to the CDMA system can then be controlled
24 on a per class basis by persistence values transmitted by the base station.

25 **PACA.** Priority Access and Channel Assignment. See PACA Call.

26 **PACA Call.** A priority mobile station originated call for which no traffic channel or voice
27 channel was immediately available, and which has been queued for a priority access
28 channel assignment.

29 **Packet.** The unit of information exchanged between the service option applications of the
30 base station and the mobile station.

31 **Padding.** A sequence of bits used to fill from the end of a message to the end of a message
32 capsule, typically to the end of the frame or half frame. All bits in the padding are '0'.

33 **Paging.** The act of seeking a mobile station when a call has been placed to that mobile
34 station.

35 **Paging Channel.** A code channel in a Forward CDMA Channel used for transmission of
36 control information and pages from a base station to a mobile station.

37 **Paging Channel Slot.** An 80 ms interval on the Paging Channel. Mobile stations
38 operating in the slotted mode are assigned specific slots in which they monitor messages
39 from the base station.

- 1 **Paging Indicator.** A one-bit datum, sent on the Quick Paging Channel. Quick paging
2 indicators are associated with mobile stations, in pairs, via a hashing algorithm.
3 Appearance of both of its indicators in its assigned Quick Paging Channel slot serves to
4 alert a slotted mode mobile station, operating in the idle state, that it should monitor the
5 Paging Channel starting in the next slot. See also Quick Paging Channel.
- 6 **Parameter-Change Registration.** A registration method in which the mobile station
7 registers when certain of its stored parameters change.
- 8 **Parity Check Bits.** Bits added to a sequence of information bits to provide error detection,
9 correction, or both.
- 10 **Passive User Zone.** A user zone in which the implicit registration that takes place at call
11 setup is sufficient to trigger a change in tiered service features. See also CDMA Tiered
12 Services, User Zone, and Active User Zone.
- 13 **PCI.** See Protocol Control Information.
- 14 **PCS.** See Personal Communications Services.
- 15 **PCSC.** See Personal Communications Switching Center.
- 16 **PCS System.** See Personal Communications Services System.
- 17 **PDU.** See Protocol Data Unit.
- 18 **Personal Communications Services System.** A configuration of equipment that provides
19 PCS radiotelephone services.
- 20 **Personal Communications Services (PCS).** A family of mobile and portable radio
21 communications services for individuals and businesses that may be integrated with a
22 variety of competing networks. Broadcasting is prohibited and fixed operations are to be
23 ancillary to mobile operations.
- 24 **Personal Communications Switching Center (PCSC).** See Mobile Switching Center
25 (MSC).
- 26 **Physical Channel.** A communication path between stations, described in terms of the RF
27 characteristics such as coding, power control policies, etc.
- 28 **Physical Layer.** The part of the communication protocol between the mobile station and
29 the base station that is responsible for the transmission and reception of data. The
30 physical layer in the transmitting station is presented a frame by the multiplex sublayer
31 and transforms it into an over-the-air waveform. The physical layer in the receiving station
32 transforms the waveform back into a frame and presents it to the multiplex sublayer above
33 it.
- 34 **Pilot Beacon.** A transmit-only base station that broadcasts a Pilot Channel, a Sync
35 Channel, optionally a Paging Channel, but no Forward Traffic Channels. The mobile
36 station measures the pilot beacon to assist in CDMA hard handoffs and inter-frequency
37 idle-mode handoffs.
- 38 **Pilot Channel.** A non-data-bearing signal transmitted by a CDMA station. See Forward
39 Pilot Channel, Transmit Diversity Pilot Channel, Auxiliary Pilot Channel, Auxiliary
40 Transmit Diversity Pilot Channel, and Reverse Pilot Channel.

1 **Pilot PN Chip.** One bit, or bit pair, of a pilot PN sequence, or the time interval
2 corresponding thereto.

3 **Pilot PN Sequence.** A pair of modified maximal length PN sequences used to spread the
4 quadrature components of a CDMA Channel.

5 **Pilot PN Sequence Offset.** The time offset of a Forward Pilot Channel from CDMA System
6 time, as transmitted by the base station, expressed modulo the pilot period.

7 **Pilot PN Sequence Offset Index.** The pilot PN sequence offset in units of 64 PN chips of a
8 Forward Pilot Channel, relative to the zero offset pilot PN sequence.

9 **Pilot Strength.** The ratio of pilot power to total power in the signal bandwidth of a CDMA
10 Forward or Reverse Channel. See also E_c/I_0 .

11 **PN.** Pseudonoise.

12 **PN Chip.** One bit in a PN sequence, or the time duration of such a bit. It corresponds to
13 the smallest modulation interval in a CDMA system.

14 **PN Sequence.** Pseudonoise sequence. A deterministic, periodic binary sequence having
15 limited statistical similarity to a Bernoulli (coin-tossing).

16 **Power Control Bit.** A bit sent on the Forward Power Control Subchannel or Reverse
17 Power Control Subchannel to signal the mobile station or base station to increase or
18 decrease its transmit power.

19 **Power Control Group.** A 1.25 ms interval on the Forward Traffic Channel and the Reverse
20 Traffic Channel. See also Power Control Bit.

21 **Power-Down Registration.** An autonomous registration method in which the mobile
22 station registers on power-down.

23 **Power Up Function.** A method by which the mobile station increases its output power to
24 support location services.

25 **Power-Up Registration.** An autonomous registration method in which the mobile station
26 registers on power-up.

27 **PPM.** Parts per million.

28 **Preamble.** See Access Channel Preamble and Traffic Channel Preamble.

29 **Primary CDMA Channel.** A pre-assigned channel in a CDMA Cellular System used by the
30 mobile station for initial acquisition. See also Secondary CDMA Channel.

31 **Primary Paging Channel (CDMA).** The default code channel (code channel 1) assigned for
32 paging on a CDMA Channel.

33 **Primary Traffic.** The main traffic stream carried between the mobile station and the base
34 station on the Traffic Channel. See also Secondary Traffic and Signaling Traffic.

35 **Primitive.** An atomic, well-defined method of transferring data and control information
36 between two adjacent layers and sublayers. Conventionally represented as a function
37 invocation with the data and/or control information as parameters.

- 1 **Private Long Code.** The long code characterized by the private long code mask. See also
2 Long Code.
- 3 **Private Long Code Mask.** The long code mask used to form the private long code. See
4 also Public Long Code Mask and Long Code.
- 5 **Private Neighbor Set.** The set of pilots associated with the private system base stations
6 that are probable candidates for idle handoff. See also Active Set, Neighbor Set, Remaining
7 Set, and CDMA Tiered Services.
- 8 **Protocol Control Information (PCI).** Data passed between adjacent layers in the protocol
9 stack, together with the SDU, to assist a layer to properly encapsulate/decapsulate the
10 SDU. Examples of PCI in this document are the MCSB and the PCSB.
- 11 **Protocol Data Unit.** Encapsulated data communicated between peer layers on the mobile
12 station and base station. Unless specified otherwise, in this document PDU refers to the
13 Layer 3 protocol data unit transferred at the interface between layer 3 and layer 2.
- 14 **Protocol Stack.** Conceptual model of the layered architecture for communication
15 protocols (see Layering) in which layers within a station are represented in the order of
16 their numeric designation and requiring that transferred data be processed sequentially by
17 each layer, in the order of their representation. Graphically, the "stack" is drawn
18 vertically, with the layer having the lowest numeric designation at the base.
- 19 **Public Long Code.** The long code characterized by the public long code mask.
- 20 **Public Long Code Mask.** The long code mask used to form the public long code. The
21 mask contains a permutation of the bits of the ESN, and also includes the channel
22 number when used for a Supplemental Code Channel. See also Private Long Code Mask
23 and Long Code.
- 24 **PUF.** See Power Up Function.
- 25 **PUF Attempt.** A sequence of PUF probes sent by the mobile station in response to a
26 *Power Up Function Message*.
- 27 **PUF Probe.** One or more consecutive frames on the Reverse Traffic Channel within which
28 the mobile station transmits the PUF pulse.
- 29 **PUF Pulse.** Portion of PUF probe that may be transmitted at elevated output power.
- 30 **PUF Target Frequency.** The CDMA frequency assignment to which the base station
31 directs a mobile station for transmitting the PUF probe.
- 32 **Punctured Code.** An error-correcting code generated from another error-correcting code
33 by deleting (i.e., puncturing) code symbols from the coder output.
- 34 **Quick Paging.** A feature that permits mobile stations to further conserve battery power
35 beyond the savings achieved by slotted mode operation. See also Paging Indicator and
36 Configuration Change Indicator.
- 37 **Quick Paging Channel.** An uncoded, on-off-keyed (OOK) spread spectrum signal sent by
38 base stations to inform slotted mode mobile stations, operating in the idle state, whether
39 to monitor the Paging Channel. See also Quick Paging, Paging Indicator, and
40 Configuration Change Indicator.

1 **Quick Paging Channel Slot.** An 80 ms interval on the Quick Paging Channel. See also
2 Paging Indicator and Configuration Change Indicator.

3 **Quick Repeats.** Additional transmissions of identical copies of a message within a short
4 interval to increase the probability that the message is received correctly.

5 **r-csch.** Reverse common signaling logical channel.

6 **r-dsch.** Reverse dedicated signaling logical channel.

7 **Radio Configuration.** A set of Forward Traffic Channel and Reverse Traffic Channel
8 transmission formats that are characterized by physical layer parameters such as
9 transmission rates, modulation characteristics and spreading rate. See Table 3.1.3.1-1
10 and Table 2.1.3.1-1 of 3GPP2 C.S0002-0.

11 **Radio Configuration Class.** A group of Radio Configurations. All Radio Configurations,
12 for the Forward Traffic Channel and the Reverse Traffic Channel, are divided into three
13 classes by the types of pre-spreading symbols (BPSK and QPSK) and spreading rates. RC
14 Class 1 consists of RC 1 and RC 2 for the Forward Traffic Channel and the Reverse Traffic
15 Channel. RC Class 2 consists of RC 3 and RC 4 of the Reverse Traffic Channel, and RC 3,
16 RC 4 and RC 5 of the Forward Traffic Channel. RC Class 3 consists of RC 5 and RC 6 of
17 the Reverse Traffic Channel, and RC 6, RC 7, RC 8, and RC 9 of the Forward Traffic
18 Channel.

19 **Rate Set.** A set of Traffic Channel transmission formats that are characterized by physical
20 layer parameters such as transmission rates, modulation characteristics, and error
21 correcting coding schemes.

22 **RC.** See Radio Configuration.

23 **Registration.** The process by which a mobile station identifies its location and parameters
24 to a base station.

25 **Registration Zone.** A collection of one or more base stations treated as a unit when
26 determining whether a mobile station should perform zone-based registration. See also
27 User Zone, with which it should not be confused.

28 **Release.** A process that the mobile station and base station use to inform each other of
29 call disconnect.

30 **Remaining Set.** The set of all allowable pilot offsets as determined by PILOT_INC,
31 excluding the pilot offsets of the pilots in the Active Set, Candidate Set, and Neighbor Set.
32 See also Active Set, Candidate Set, and Neighbor Set.

33 **Request.** A layer 3 message generated by either the mobile station or the base station to
34 retrieve information, ask for service, or command an action.

35 **Response.** A layer 3 message generated as a result of another message, typically a
36 request.

37 **Reverse CDMA Channel.** The CDMA Channel from the mobile station to the base station.
38 From the base station's perspective, the Reverse CDMA Channel is the sum of all mobile
39 station transmissions on a CDMA Frequency Assignment.

40 **Reverse Dedicated Control Channel.** A Dedicated Control Channel that is transmitted

- 1 on the Reverse CDMA Channel.
- 2 **Reverse Fundamental Channel.** A Fundamental Channel that is transmitted on the
3 Reverse CDMA Channel.
- 4 **Reverse Pilot Channel.** A non-data-bearing direct-sequence spread spectrum signal
5 transmitted by each CDMA mobile station whenever the Enhanced Access Channel,
6 Reverse Common Control Channel, or Reverse Traffic Channel is enabled. The Reverse
7 Pilot Channel allows a base station to acquire the timing of the Reverse CDMA Channel
8 and provides a phase reference for coherent demodulation. The Reverse Pilot Channel may
9 be transmitted either continuously or in gated mode.
- 10 **Reverse Supplemental Channel.** A Supplemental Channel that is transmitted on the
11 Reverse CDMA Channel.
- 12 **Reverse Supplemental Code Channel.** A Supplemental Code Channel that is transmitted
13 on the Reverse CDMA Channel.
- 14 **Reverse Traffic Channel.** A Traffic Channel on which data and signaling are transmitted
15 from a mobile station to a base station. The Reverse Traffic Channel is composed zero or
16 one Reverse Fundamental Channel, zero to seven Reverse Supplemental Code Channels,
17 zero to two Reverse Supplemental Channels, and zero or one Reverse Dedicated Control
18 Channel.
- 19 **Roamer.** A mobile station operating in a cellular system (or network) other than the one
20 from which service was subscribed. See also Foreign NID Roamer and Foreign SID
21 Roamer.
- 22 **SAP.** See Service Access Point.
- 23 **SCI.** See Synchronized Capsule Indicator Bit.
- 24 **SDU.** See Service Data Unit.
- 25 **Search Window.** The range of PN sequence offsets that a mobile station searches for a
26 pilot.
- 27 **Search Window Offset.** PN sequence offset used by the mobile station to position the
28 search window when searching for a pilot.
- 29 **Secondary CDMA Channel.** A pre-assigned channel in a CDMA Cellular System used by
30 the mobile station for initial acquisition. See also Primary CDMA Channel.
- 31 **Secondary Traffic.** An additional traffic stream that can be carried between the mobile
32 station and the base station on the Traffic Channel. See also Primary Traffic and Signaling
33 Traffic.
- 34 **Service Access Point.** Conceptual point at the interface between two adjacent layers
35 where services are provided to the upper layer and data and protocol information is
36 exchanged between layers.
- 37 **Service Configuration.** The common attributes used by the mobile station and the base
38 station to build and interpret Traffic Channel frames. A service configuration consists of
39 Forward and Reverse Traffic Channel multiplex options, Forward and Reverse Traffic
40 Channel transmission rates, and service option connections.

1 **Service Data Unit.** Data transferred between adjacent layers in the protocol stack.
2 Unless specified otherwise in this document SDU refers to the Layer 3 service data unit
3 being transferred to/from Layer 2.

4 **Service Negotiation.** The procedures used by the mobile station and base station to
5 establish a service configuration. See also Service Option Negotiation.

6 **Service Option.** A service capability of the system. Service options may be applications
7 such as voice, data, or facsimile. See TSB58-A.

8 **Service Option Connection.** A particular instance or session in which the service defined
9 by a service option is used. Associated with a service option connection are a reference,
10 which is used for uniquely identifying the service option connection, a service option,
11 which specifies the particular type of service in use, a Forward Traffic Channel traffic type,
12 which specifies what type of Forward Traffic Channel traffic is used to support the service
13 option connection, and a Reverse Traffic Channel traffic type, which specifies what type of
14 Reverse Traffic Channel traffic is used by the service option connection.

15 **Service Option Connection Reference.** A designator used by the base station and
16 mobile station to uniquely identify a particular service option connection.

17 **Service Option Negotiation.** The procedures used by the mobile station and base station
18 to establish a service configuration. Service option negotiation is similar to service
19 negotiation, but allows less flexibility for specifying the attributes of the service
20 configuration. See also Service Negotiation.

21 **Service Redirection.** The process by which the base station alters the system selection
22 made by a mobile station. It can be used temporarily during maintenance and testing to
23 divert subscribers to an alternate system.

24 **Serving Frequency.** The CDMA frequency on which a mobile station is currently
25 communicating with one or more base stations.

26 **Shared Secret Data (SSD).** A 128-bit pattern stored in the mobile station (in semi-
27 permanent memory) and known by the base station. SSD is a concatenation of two 64-bit
28 subsets: SSD_A, which is used to support the authentication procedures, and SSD_B,
29 which serves as one of the inputs to the process generating the encryption mask and
30 private long code.

31 **Short Message Services (SMS).** A suite of services such as SMS Text Delivery, Digital
32 Paging (i.e., Call Back Number - CBN), and Voice Mail Notification (VMN).

33 **SID.** See System Identification.

34 **Signaling Traffic.** Control messages that are carried between the mobile station and the
35 base station on the Traffic Channel. See also Primary Traffic and Secondary Traffic.

36 **Slotted Mode.** An operation mode of the mobile station in which the mobile station
37 monitors only selected slots on the Paging Channel when in the *Mobile Station Idle State*.

38 **Soft Handoff.** A handoff occurring while the mobile station is in the *Mobile Station Control*
39 *on the Traffic Channel State*. This handoff is characterized by commencing

1 communications with a new base station on the same CDMA Frequency Assignment before
2 terminating communications with an old base station. See also Hard Handoff.

3 **SOM.** Start-of-Message bit.

4 **sps.** Symbols per second.

5 **SSD.** See Shared Secret Data.

6 **Station Class Mark (SCM).** An identification of certain characteristics of a mobile station.
7 Classes are defined in Table 2.3.3-1 of TIA/EIA-553-A and Table 6.3.3-1 of this document.

8 **Status Information.** The following status information is used to describe mobile station
9 operation when using the analog system:

- 10 • Serving-System Status. Indicates whether a mobile station is tuned to channels
11 associated with System A or System B.
- 12 • First Registration ID Status. A status variable used by the mobile station in
13 association with its processing of received Registration ID messages.
- 14 • First Location Area ID Status. A status variable used by the mobile station in
15 association with its processing of received Location Area ID messages.
- 16 • Location Registration ID Status. A status variable used by the mobile station in
17 association with its processing of power-up registrations and location-based
18 registrations.
- 19 • First Idle ID Status. A status variable used by the mobile station in association
20 with its processing of the Idle Task.
- 21 • Local Control Status. Indicates whether a mobile station must respond to local
22 control messages.
- 23 • Roam Status. Indicates whether a mobile station is in its home system.
- 24 • Termination Status. Indicates whether a mobile station must terminate the call
25 when it is on an analog voice channel.
- 26 • Update Protocol Capability Status. Indicates whether the mobile station should
27 report its protocol capability to the serving system.

28 **Supplemental Channel.** An optional portion of a Traffic Channel (Forward or Reverse
29 Radio Configurations 3 and above) that operates in conjunction with a Fundamental
30 Channel in that Traffic Channel, and (optionally) with other Supplemental Channels to
31 provide higher data rate services.

32 **Supplemental Code Channel.** An optional portion of a Traffic Channel (Forward or
33 Reverse Radio Configurations 1 and 2) that operates in conjunction with a Fundamental
34 Code Channel in that Traffic Channel, and (optionally) with other Supplemental Code
35 Channels to provide higher data rate services. On this channel a combination of primary
36 data, secondary data, or both (but never signaling information) are transmitted.

37 **Symbol.** See Code Symbol and Modulation Symbol.

1 **Sync Channel.** Code channel 32 in the Forward CDMA Channel which transports the
2 synchronization message to the mobile station.

3 **Sync Channel Superframe.** An 80 ms interval consisting of three Sync Channel frames
4 (each 26.666... ms in length).

5 **Synchronized Capsule Indicator Bit (SCI).** The first bit in any Paging Channel half
6 frame, which indicates whether a synchronized message capsule immediately follows.

7 **System.** A system is a cellular telephone service or personal communications service that
8 covers a geographic area such as a city, metropolitan region, county, or group of counties.
9 See also Network.

10 **System Identification (SID).** A number uniquely identifying a cellular or PCS system.

11 **System Time.** The time reference used by the system. System Time is synchronous to
12 UTC time (except for leap seconds) and uses the same time origin as GPS time. All base
13 stations use the same System Time (within a small error). Mobile stations use the same
14 System Time, offset by the propagation delay from the base station to the mobile station.
15 See also Universal Coordinated Time.

16 **Target Frequency.** The CDMA frequency assignment to which the base station directs a
17 mobile station in a handoff using an *Extended Handoff Direction Message*, a *General*
18 *Handoff Direction Message*, or a *Universal Handoff Direction Message*.

19 **Temporary Mobile Station Identity (TMSI).** A temporary mobile station identification
20 assigned by the base station.

21 **Timer-Based Registration.** A registration method in which the mobile station registers
22 whenever a counter reaches a predetermined value. The counter is incremented an
23 average of once per 80 ms period.

24 **Time Reference.** A reference established by the mobile station that is synchronous with
25 the earliest arriving multipath component used for demodulation.

26 **TMSI.** See Temporary Mobile Station Identity.

27 **TMSI Zone.** The administrative zone that allows the TMSI to be reused. The TMSI_CODE
28 has to be unique within a TMSI zone but may be reused in a different TMSI zone. The
29 TMSI zone is identified by the field TMSI_ZONE.

30 **Traffic Channel.** A communication path between a mobile station and a base station
31 used for user and signaling traffic. The term Traffic Channel implies a Forward Traffic
32 Channel and Reverse Traffic Channel pair. See also Forward Traffic Channel and Reverse
33 Traffic Channel.

34 **Traffic Channel Preamble.** A sequence of all-zero frames that is sent by the mobile
35 station on the Reverse Traffic Channel as an aid to Traffic Channel acquisition.

36 **Unassured Mode.** Mode of delivery that does not guarantee that a PDU will be delivered to
37 the peer. The LAC entity at the receiver does not acknowledge a PDU sent in unassured
38 mode.

39 **Unique Challenge-Response Procedure.** An exchange of information between a mobile
40 station and a base station for the purpose of confirming the mobile station's identity. The

1 procedure is initiated by the base station and is characterized by the use of a challenge-
 2 specific random number (i.e., RANDU) instead of the random variable broadcast globally
 3 (RAND).

4 **Unique Random Variable (RANDU).** A 24-bit random number generated by the base
 5 station in support of the Unique Challenge-Response procedure.

6 **Universal Coordinated Time (UTC).** An internationally agreed-upon time scale
 7 maintained by the Bureau International de l'Heure (BIH) used as the time reference by
 8 nearly all commonly available time and frequency distribution systems i.e., WWV, WWVH,
 9 LORAN-C, Transit, Omega, and GPS.

10 **User Zone.** An area within which CDMA Tiered Services may be provided. It may
 11 correspond to an RF coverage area, or it may be established independent of RF topology.
 12 User Zones are classified as broadcast versus mobile-specific, and as active versus passive.
 13 See Broadcast User Zone, Mobile-Specific User Zone, Active User Zone, and Passive User
 14 Zone. See also Registration Zone, with which it should not be confused.

15 **User Zone Registration.** An autonomous registration method in which the mobile station
 16 registers when it selects an active user zone while in the Idle State. See also Zone-Based
 17 Registration, with which it should not be confused.

18 **Upper Layers.** General reference to Layer 3 and the layers above it.

19 **User Zone Exit parameter.** A parameter used by the mobile station to determine if it
 20 should exit a User Zone.

21 **UTC.** Universal Temps Coordoné. See Universal Coordinated Time.

22 **Voice Privacy.** The process by which user voice transmitted over a CDMA Traffic Channel
 23 is afforded a modest degree of protection against eavesdropping over the air.

24 **Walsh Chip.** The shortest identifiable component of a Walsh function. There are 2^N
 25 Walsh chips in one Walsh function where N is the order of the Walsh function. On the
 26 Forward CDMA Channel, one Walsh chip equals $1/1.2288$ MHz, or 813.802... ns. On the
 27 Reverse CDMA Channel, one Walsh chip equals $4/1.2288$ MHz, or 3.255... μ s.

28 **Walsh Function.** One of 2^N time orthogonal binary functions (note that the functions are
 29 orthogonal after mapping '0' to 1 and '1' to -1).

30 **Zone-Based Registration.** An autonomous registration method in which the mobile
 31 station registers whenever it enters a zone that is not in the mobile station's zone list. See
 32 also User Zone Registration, with which it should not be confused.

33 **Zone Timer.** A timer used by the mobile station to remove outdated entries from its list of
 34 zones in which it has previously registered.

35 **μ s.** Microsecond (10^{-6} second).

36 1.1.2 Numeric Information

37 Numeric information is used to describe the operation of the mobile station. The following
 38 subscripts are used to clarify the use of the numeric information:

- 39 • "s" indicates a value stored in a mobile station's temporary memory.

- 1 • "sv" indicates a stored value that varies as a mobile station processes various tasks.
- 2 • "sl" indicates the stored limits on values that vary.
- 3 • "r" indicates a value received by a mobile station over a forward analog control
- 4 channel or a CDMA Forward Channel.
- 5 • "p" indicates a value set in a mobile station's permanent security and identification
- 6 memory.
- 7 • "s-p" indicates a value stored in a mobile station's semi-permanent security and
- 8 identification memory.

9 1.1.2.1 Reserved

10 1.1.2.2 CDMA Numeric Information

11 The following are internal values that are stored by the mobile station in temporary
 12 memory that are not sent over the air. See Annex F for values stored by the mobile station
 13 in permanent and semi-permanent memory.

14 **ACC_CHAN_s** – Number of Access Channels supported by the current Paging Channel.

15 **ACC_ENT_HO_ORDER_s** – Access entry handoff permitted from the *Mobile Station Order*
 16 *and Message Processing Operation* of the *Mobile Station Idle State*.

17 **ACCESS_ENTRY_HO_s** – Idle handoff permitted when entering the *System Access State*.

18 **ACCESS_HO_s** – Handoff permitted after performing an access attempt while the mobile
 19 station is in the *System Access State*.

20 **ACCESS_HO_ALLOWED_s** – Handoff permitted to the corresponding neighbor base station
 21 while in the *System Access State*.

22 **ACCESS_HO_LIST** – List of pilots to which access handoff or access probe handoff is
 23 permitted.

24 **ACC_HO_LIST_UPD_s** – Access handoff list update permitted indicator.

25 **ACCESS_HO_MSG_RSP_s** – Access handoff permitted in the *System Access State* between
 26 the time that the mobile station receives a message and responds to that message.

27 **ACCESS_PROBE_HO_s** – Access probe handoff permitted during an access attempt in the
 28 *Mobile Station Origination Attempt Substate* or the *Page Response Substate*.

29 **ACC_MSG_SEQ_s** – Last received *Access Parameters Message* sequence number.

30 **ACC_PROBE_HO_OTHER_MSG_s** – Access probe handoff permitted for Access Channel
 31 messages other than the *Origination Message* and the *Page Response Message*.

32 **ACC_TMO_s** – Access Channel acknowledgment timeout, in units of 80 ms.

33 **ACK_WAITING_s[i]** – Acknowledgment status indicator for message sequence number i. Set
 34 to YES if an acknowledgment is pending for the message; otherwise, set to NO.

35 **ADD_INTERCEPT_s** – The intercept in the inequality criterion for adding a pilot to the
 36 Active Set.

- 1 **AGE_s** – Neighbor list age. For each pilot in the Neighbor Set, the mobile station
 2 increments this counter each time a *Neighbor List Update Message* or an *Extended*
 3 *Neighbor List Updae Message* is received. When AGE_s exceeds NGBHR_MAX_AGE, the
 4 pilot is deleted from the Neighbor Set.
- 5 **ALIGN_TIMING_USED_s** – Indicates whether the mobile station aligns the times of visits
 6 away from the Serving Frequency, as requested by the base station, in the periodic search
 7 procedures.
- 8 **ANALOG_CHAN_s** – Analog channel number for CDMA-to-analog handoff.
- 9 **ANALOG_NGHR_LIST** – List containing information about neighboring analog systems.
- 10 **AN_CHAN_TYPE_s** – Analog voice channel type.
- 11 **ASSIGNED_QPAGECH_s** – Assigned Quick Paging Channel number.
- 12 **AUTH_s** – Current authentication mode.
- 13 **BAD_FRAMES_s** – Bad frames count. The number of received bad frames.
- 14 **BASE_CLASS_s** – Base station class of the current base station.
- 15 **BASE_ID_s** – Base station identification of the current base station.
- 16 **BASE_LAT_s** – Latitude of the current base station, in units of 0.25 seconds.
- 17 **BASE_LONG_s** – Longitude of the current base station, in units of 0.25 seconds.
- 18 **BEGIN_PREAMBLE_s** – A stored variable in the mobile station that contains the size of the
 19 preamble that shall be transmitted on a Reverse Supplemental Code Channel at the
 20 beginning of a Reverse Supplemental Code Channel transmission.
- 21 **BKOFF_s** – Access Channel probe sequence backoff range.
- 22 **BLOB_FROM_RC_s** – Block of bits received from the Resource Control. The contents of the
 23 BLOB is transparent to Layer 3.
- 24 **BLOB_FROM_MSG_s** – Block of bits received in an over-the-air message. The contents of
 25 the BLOB is transparent to Layer 3.
- 26 **BYPASS_ALERT_ANSWER_s** – Mobile station termination bypass indicator. This is set to
 27 '1' if the mobile station is to bypass the *Waiting for Order Substate* and the *Waiting for*
 28 *Mobile Station Answer Substate*, and proceed directly to the *Conversation Substate* when
 29 Layer 3 receives a *forward dedicated channel-acquired* indication from Layer 2.
- 30 **CDMABAND_s** – CDMA band class. The CDMA band class currently used by the mobile
 31 station.
- 32 **CDMACH_s** – CDMA Channel number. The CDMA Channel number currently used by the
 33 mobile station.
- 34 **CF_CDMABAND_s** – Candidate Frequency CDMA band class. The CDMA band class
 35 specified in the *Candidate Frequency Search Request Message*.
- 36 **CF_CDMACH_s** – Candidate Frequency CDMA Channel number. The CDMA Channel
 37 number specified in the *Candidate Frequency Search Request Message*.

- 1 **CF_PILOT_INC_s** - PILOT_INC to be used by the mobile station after an inter-frequency
2 hard handoff to the CDMA Candidate Frequency is successfully completed.
- 3 **CF_SEARCH_PRIORITY_INCL_s** - Candidate Frequency neighbor pilots' search priority
4 included indicator.
- 5 **CF_SRCH_OFFSET_INCL_s** - Candidate Frequency neighbor pilot search window offset
6 included indicator.
- 7 **CF_SRCH_WIN_NGHR_INCL_s** - Candidate Frequency neighbor pilots' search window
8 included indicator.
- 9 **CF_SRCH_WIN_N_s** - Search window size for the Candidate Frequency Search Set.
- 10 **CF_SRCH_WIN_R_s** - Search window size to be used for the Remaining Set after an inter-
11 frequency hard handoff to the CDMA Candidate Frequency is successfully completed.
- 12 **CF_T_ADD_s** - Pilot detection threshold to be used on the CDMA Candidate Frequency.
- 13 **CH_IND_FROM_MSG_s** - Physical channel indicator based on the value received in an over-
14 the-air message. The least significant bit denotes the Fundamental Channel, the second
15 least significant bit denotes the Dedicated Control Channel, and the most significant bit
16 denotes the Continuous Reverse Pilot.
- 17 **CH_IND_FROM_RC_s** - Physical channel indicator based on the value received from the
18 Resource Control. The least significant bit denotes the Fundamental Channel, the second
19 least significant bit denotes the Dedicated Control Channel, and the most significant bit
20 denotes the Continuous Reverse Pilot.
- 21 **CHAN_LST_MSG_SEQ_s** - *CDMA Channel List Message* sequence number.
- 22 **CODE_CHAN_LIST** - Code Channel List. A descriptive structure used to manage the
23 Forward Fundamental Channel, and Forward Supplemental Code Channels, if any,
24 associated with the mobile station's Active Set.
- 25 **COMPLETE_PUF_FRAME_s** - Number of power control groups required to make the PUF
26 probe an integer number of frames.
- 27 **COMPLETE_SEARCH_s** - Flag to indicate if the mobile station is to complete the search of
28 the Candidate Frequency Search Set after it has determined that the inter-frequency
29 handoff attempt to the CDMA Candidate Frequency is unsuccessful.
- 30 **CONFIG_MSG_SEQ_s** - Current message sequence number for the *System Parameters*
31 *Message*, *Neighbor List Message*, *Extended Neighbor List Message*, *General Neighbor List*
32 *Message*, *CDMA Channel List Message*, *Extended System Parameters Message*, *Global*
33 *Service Redirection Message*, *Private Neighbor List Message*, *User Zone Identification*
34 *Message*, *Extended CDMA Channel List Message*, *Extended Global Service Redirection*
35 *Message*.
- 36 **CON_REF_FROM_RC_s** - Connection Reference received from the Resource Control.
- 37 **COUNTER_ENABLED_s** - Timer-based registration indicator. Set to YES if timer-based
38 registration is enabled; otherwise, set to NO.
- 39 **CURR_ACC_MSG_SEQ** - *Current Access Parameter Message* sequence number.

- 1 **CURRENT_ACTIVE_PILOT_s** – Identifies the current pilot in the Active Set during an
- 2 access attempt.
- 3 **CURRENT_PUF_PROBE_s** – Number of the next PUF probe to be transmitted within the
- 4 PUF attempt.
- 5 **DAYLT_s** – Daylight Savings Time indicator.
- 6 **DECORR** – Hashing function input used to decorrelate hashing function applications for
- 7 the same mobile station.
- 8 **DEFAULT_CONFIG_s** – Mobile station current default configuration.
- 9 **DELETE_FOR_TMSI_s** – A storage variable in the mobile station that indicates whether the
- 10 mobile station should delete its current TMSI if the TMSI was assigned in a different TMSI
- 11 zone.
- 12 **DIFF_RX_PWR_THRESH_s** – Threshold for the difference between the received power on
- 13 the Serving Frequency and the received power on the CDMA Candidate Frequency for the
- 14 mobile station to search for pilots on the CDMA Candidate Frequency.
- 15 **DISTANCE** – Distance from registered base station to current base station, used for
- 16 distance-based registration.
- 17 **DROP_INTERCEPT_s** – The intercept in the inequality criterion for dropping a pilot from
- 18 the Active Set.
- 19 **DSCC_s** – Digital supervisory color code.
- 20 **DTX_s** – Discontinuous transmission mode for analog channel assignment and CDMA-to-
- 21 analog handoff.
- 22 **EC_IO_THRESH_s** – Pilot E_c/I_o threshold used for system reselection.
- 23 **EC_THRESH_s** – Pilot power threshold used for system reselection.
- 24 **ENCRYPT_MODE_s** – Current message encryption mode.
- 25 **EXCL_P_REV_MS** – Exclude from redirection by MOB_P_REV indicator.
- 26 **EXT_NGHR_LST_MSG_SEQ_s** – *Extended Neighbor List Message* sequence number.
- 27 **EXT_CHAN_LST_s** – *Extended CDMA Channel List Message* sent indicator.
- 28 **EXT_CHAN_LST_MSG_SEQ_s** – *Extended CDMA Channel List Message* sequence number.
- 29 **EXT_GLOBAL_REDIRECT_s** – *Extended Global Service Redirection Message* sent indicator.
- 30 **EXT_GLOB_SERV_REDIR_MSG_SEQ_s** – *Extended Global Service Redirection Message*
- 31 sequence number.
- 32 **EXT_SYS_PARAMETER_s** – *Extended System Parameters Message* sent indicator.
- 33 **EXT_SYS_PAR_MSG_SEQ_s** – *Extended System Parameters Message* sequence number.
- 34 **FIRST_ACTIVE_PILOT_s** – While the mobile station is in the *System Access State*, identifies
- 35 the pilot to which the first access probe was transmitted, upon entering the *System Access*
- 36 *State*.

- 1 **FOR_DURATION_s** - A stored variable in the mobile station that contains the duration (in
- 2 units of 80 ms) of a forward Supplemental Code Channel transmission that begins at time
- 3 **FOR_START_TIME_s**.
- 4 **FOR_FCH_RC_s** - Forward Fundamental Channel Radio Configuration.
- 5 **FOR_FRAME_40_MAX_RATE_s** - The maximum data rate for the mobile station's
- 6 transmission at 40 ms frame length on the Forward Supplemental Channel.
- 7 **FOR_FRAME_80_MAX_RATE_s** - The maximum data rate for the mobile station's
- 8 transmission at 80 ms frame length on the Forward Supplemental Channel.
- 9 **FOR_LINKED_HDM_SEQ_s** - Storage variable containing the most recent forward sequence
- 10 number of the *General Handoff Direction Message* to which a *Supplemental Channel*
- 11 *Assignment Message* forward assignment was linked.
- 12 **FOR_NID_REG_s** - Foreign NID roamer autonomous registration enable.
- 13 **FOR_RC_s** - Forward Channel Radio Configuration.
- 14 **FOR_SCH_DURATION_s** - A stored variable in the mobile station which contains the
- 15 duration of a forward Supplemental Channel transmission which begins at time
- 16 **FOR_SCH_START_TIME_s**.
- 17 **FOR_SCH_FRAME_LENGTH_s** - The Forward Supplemental Channel frame length.
- 18 **FOR_SCH_START_TIME_s** - A stored variable in the mobile station which contains the
- 19 System Time, in units of time specified by **START_TIME_UNIT_s**, (modulo 32) at which the
- 20 mobile station shall start (or resume) processing Forward Supplemental Channels.
- 21 **FOR_SID_REG_s** - Foreign SID roamer autonomous registration enable.
- 22 **FOR_START_TIME_s** - A stored variable in the mobile station that contains the System
- 23 Time, in units of 80 ms, (modulo 64) at which the mobile station shall start (or resume)
- 24 processing Forward Supplemental Code Channels.
- 25 **FPC_DCCH_CURR_SETPT_s** - Current power control subchannel outer loop setpoint for
- 26 the Forward Dedicated Control Channel.
- 27 **FPC_DCCH_FER_s** - Target frame error rate for the Forward Dedicated Control Channel.
- 28 **FPC_DCCH_MAX_SETPT_s** - Maximum value of the power control subchannel outer loop
- 29 setpoint for the Forward Dedicated Control Channel.
- 30 **FPC_DCCH_MIN_SETPT_s** - Minimum value of the power control subchannel outer loop
- 31 setpoint for the Forward Dedicated Control Channel.
- 32 **FPC_DELTA_SCH_SETPT_s** - The difference between the Fundamental Channel current
- 33 power control subchannel outer loop setpoint and the Supplemental Channel current
- 34 power control subchannel outer loop setpoint.
- 35 **FPC_DELTA_SETPT_s** - The difference between the Fundamental Channel current power
- 36 control subchannel outer loop setpoint and the Dedicated Control Channel current power
- 37 control subchannel outer loop setpoint.

- 1 **FPC_FCH_CURR_SETPT_s** – Current power control subchannel outer loop setpoint for the
- 2 Forward Fundamental Channel.
- 3 **FPC_FCH_FER_s** – Target frame error rate for the Forward Fundamental Channel.
- 4 **FPC_FCH_MAX_SETPT_s** – Maximum value of the power control subchannel outer loop
- 5 setpoint for the Forward Fundamental Channel.
- 6 **FPC_FCH_MIN_SETPT_s** – Minimum value of the power control subchannel outer loop
- 7 setpoint for the Forward Fundamental Channel.
- 8 **FPC_MODE_s** – Forward power control operating mode.
- 9 **FPC_PRI_CHAN_s** – Primary power control subchannel measured channel.
- 10 **FPC_SEC_CHAN_s** – Index of Forward Supplemental Channel to be measured by the
- 11 secondary power control subchannel.
- 12 **FPC_SCH_CURR_SETPT_s[i]** – Current power control subchannel outer loop setpoint for
- 13 Forward Supplemental Channel i.
- 14 **FPC_SCH_FER_s[i]** – Target frame error rate for Forward Supplemental Channel i.
- 15 **FPC_SCH_MAX_SETPT_s[i]** – Maximum value of the power control subchannel outer loop
- 16 setpoint for Forward Supplemental Channel i.
- 17 **FPC_SCH_MIN_SETPT_s[i]** – Minimum value of the power control subchannel outer loop
- 18 setpoint for Forward Supplemental Channel i.
- 19 **FPC_SETPT_THRESH_s** – Power control subchannel outer loop setpoint report threshold
- 20 for the Dedicated Control Channel.
- 21 **FPC_SETPT_THRESH_SCH_s** – Power control subchannel outer loop setpoint report
- 22 threshold for the Supplemental Channel.
- 23 **FRAME_OFFSET_s** – Current Traffic Channel frame offset, in units of 1.25 ms.
- 24 **GEN_NGHR_LST_MSG_SEQ_s** – *General Neighbor List Message* sequence number.
- 25 **GLOBAL_REDIRECT_s** – *Global Service Redirection Message* sent indicator.
- 26 **GLOB_SERV_REDIR_MSG_SEQ_s** – *Global Service Redirection Message* sequence number.
- 27 **GRANTED_MODE_s** – Mobile station current granted mode.
- 28 **HASH_KEY** – Hashing function input that determines the return value. Derived from
- 29 IMSI_O.
- 30 **HDM_SEQ_s** – Last received *Extended Handoff Direction Message*, *General Handoff Direction*
- 31 *Message*, or *Universal Handoff Direction Message* sequence number.
- 32 **HOME_REG_s** – Home (non-roaming) autonomous registration enable.
- 33 **IGNORE_SCAM_s** – Identifies whether a mobile station will process the reverse
- 34 supplemental channel assignment portion of the subsequent Supplemental Channel
- 35 Assignment Message.
- 36 **IMSI_11_12_s** – The 11th and 12th digits of the IMSI used for address matching.

- 1 **IMSI_O_ADDR_NUM_S**- The number of digits in the NMSI of the Operational IMSI (IMSI_O)
- 2 minus four.
- 3 **IMSI_O_S_S** - The last 10-digits of Operational IMSI (IMSI_O).
- 4 **IMSI_O_11_12_S** - The 11th and 12th digits of the Operational IMSI (IMSI_O).
- 5 **INIT_PWR_S** - Initial power offset for Access Channel probes.
- 6 **LC_STATE_S** - Long code state obtained from the *Sync Channel Message*.
- 7 **LP_SEC_S** - Leap seconds count (offset of CDMA system time from UTC).
- 8 **LTM_OFF_S** - Local time offset from UTC, in units of 15 minutes.
- 9 **MAX_CAP_SZ_S** - Maximum number of Access Channel frames in an Access Channel
- 10 message capsule, less 3.
- 11 **MAX_NUM_ALT_SO_S** - The maximum number of alternative service option numbers that
- 12 the mobile station is allowed to include in the *Origination Message* or in the *Page Response*
- 13 *Message*.
- 14 **MAX_NUM_PROBE_HO_S** - The maximum number of times that a mobile station is
- 15 permitted to perform an access probe handoff.
- 16 **MAX_PWR_PUF_S** - Maximum number of PUF probes to be transmitted at maximum mobile
- 17 station output power during a PUF attempt.
- 18 **MAX_REQ_SEQ_S** - Maximum number of access probe sequences for an Access Channel
- 19 request.
- 20 **MAX_RSP_SEQ_S** - Maximum number of access probe sequences for an Access Channel
- 21 response.
- 22 **MAX_SLOT_CYCLE_S** - Maximum value of the slot cycle index allowed by the current base
- 23 station.
- 24 **MCC_S** - The Mobile Country Code used for address matching.
- 25 **MCC_O_S** - The Mobile Country Code of IMSI_O.
- 26 **MEM_S** - Analog message encryption mode for CDMA-to-analog handoff.
- 27 **MIN_PILOT_EC_IO_THRESH_S** - Threshold for total E_c/I_o of pilots in the Serving
- 28 Frequency Active Set used in the Periodic Serving Frequency Pilot Report Procedure.
- 29 **MIN_PILOT_PWR_THRESH_S** - Threshold for total E_c of pilots in the Serving Frequency
- 30 Active Set used in the Periodic Serving Frequency Pilot Report Procedure.
- 31 **MIN_P_REV_S** - Minimum mobile station protocol revision level required for access to the
- 32 CDMA system.
- 33 **MIN_TOTAL_PILOT_EC_IO_S** - Total pilot strength threshold for the mobile station to
- 34 attempt to demodulate the Forward Traffic Channel on the CDMA Candidate Frequency.
- 35 **MOB_TERM_S** - Mobile station termination indicator. Set to '1' if the mobile station will
- 36 accept mobile station terminated calls in its current roaming status.
- 37 **MSG_PSIST_S** - Persistence modifier for Access Channel message transmissions.

- 1 **MS_LAT_s** – The latitude of the mobile station as estimated by the base station.
- 2 **MS_LOC_TSTAMP_s** – The time corresponding to the estimate of mobile station's latitude
3 and longitude.
- 4 **MS_LONG_s** – The longitude of the mobile station as estimated by the base station.
- 5 **MULT_NIDS_s** – Multiple NID storage indicator. Set to '1' if the mobile station may store
6 more than one entry in SID_NID_LIST_s for each SID.
- 7 **MULT_SIDS_s** – Multiple SID storage indicator. Set to '1' if the mobile station may store
8 entries in SID_NID_LIST_s having different SIDs.
- 9 **NAR_AN_CAP_s** – Narrow analog voice channel capability.
- 10 **NDSS_ORIG_s** – NDSS Origination Indicator. Indicator used when the mobile station is
11 NDSS-redirected while originating a call.
- 12 **NGHBR_BAND_s** – Neighbor band class.
- 13 **NGHBR_CONFIG_s** – Neighbor base station channel allocation configuration.
- 14 **NGHBR_FREQ_s** – Neighbor CDMA channel number.
- 15 **NGHBR_LST_MSG_SEQ_s** – *Neighbor List Message* sequence number.
- 16 **NGHBR_MAX_AGE_s** – Neighbor set maximum age for retention in the set.
- 17 **NGHBR_PN_s** – Neighbor base station Pilot Channel PN sequence offset in units of 64 PN
18 chips.
- 19 **NGHBR_REC** – Record containing information about a neighbor base station (see also
20 NGHBR_REC_LIST).
- 21 **NGHBR_REC_LIST** – Neighbor base station record list. A descriptive structure used to
22 manage the base station's information records about neighbor base stations (see also
23 NGHBR_REC).
- 24 **NGHBR_SET_ACCESS_INFO_s** – Neighbor Set access handoff or access probe handoff
25 information included indicator.
- 26 **NGHBR_SET_ENTRY_INFO_s** – Neighbor Set access entry handoff information included
27 indicator.
- 28 **NGHBR_SET_SIZE_s** – Size of the Neighbor Set.
- 29 **NGHBR_TIMING_INCL_s** – Indicates that hopping pilot beacon timing information is
30 included.
- 31 **NGHBR_TX_DURATION_s** – Hopping pilot beacon transmit time duration.
- 32 **NGHBR_TX_OFFSET_s** – Hopping pilot beacon transmit time offset.
- 33 **NGHBR_TX_PERIOD_s** – Hopping pilot beacon transmit time period.
- 34 **NID_s** – Network identification. A network is a subset of the base stations within a cellular
35 or PCS system.

- 1 **NOM_PWR_S** – Nominal transmit power offset. A correction factor to be used by mobile
- 2 stations in the open loop power estimate.
- 3 **NUM_ANALOG_NGHBR_S** – Number of neighboring analog systems.
- 4 **NUM_PREAMBLE_S** – Number of Traffic Channel preamble.
- 5 **NUM_QPCH_S** – Number of Quick Paging Channels supported on the current CDMA
- 6 channel.
- 7 **NUM_REV_CODES_S** – A storage variable in the mobile station that contains the number of
- 8 Reverse Supplemental Code Channels that will be utilized in the next Reverse
- 9 Supplemental Code Channel transmission beginning at time REV_START_TIME_S. A value
- 10 of 0 indicates no Reverse Supplemental Code Channel transmission will be permitted (i.e.,
- 11 there is no pending Reverse Supplemental Code Channel transmission).
- 12 **NUM_STEP_S** – Number of access probes in a single access probe sequence.
- 13 **OTHER_REPORTED_LIST** – List of other pilots that have pilot strengths exceeding T_ADD
- 14 and that are not included in ACCESS_HO_LIST.
- 15 **PACA_S** – PACA call indicator. Set to enabled to indicate that the mobile station is waiting
- 16 for a priority access channel assignment; otherwise, set to disabled. In Sections 2 and 3,
- 17 PACA_S = 0 is equivalent to setting PACA_S to disabled and PACA_S = 1 is equivalent to setting
- 18 PACA_S to enabled.
- 19 **PACA_CANCEL** – PACA call cancel indicator. Set to '1' when the mobile station is directed
- 20 by the user to cancel the PACA call; otherwise, set to '0'.
- 21 **PACA_SID_S** – PACA system identifier. Equal to the SID of the system on which the mobile
- 22 station originated a PACA call.
- 23 **PACA_TIMEOUT_S** – PACA state timer duration. Specifies how long the mobile station
- 24 should wait for a PACA Message from the base station.
- 25 **PACKET_ZONE_ID_S** – Packet data services zone identifier of the base station.
- 26 **PAGECH_S** – Current CDMA Paging Channel number.
- 27 **PAGED** – Indicator for a page match detected while the mobile station is in the System
- 28 Access State.
- 29 **PAGE_CHAN_S** – Number of Paging Channels supported on the current CDMA channel.
- 30 **PAM_SZ_S** – Number of frames in the Access Channel preamble, less 1.
- 31 **PARAMETER_REG_S** – Parameter-change registration enable.
- 32 **PERIODIC_SEARCH_S** – Flag to indicate if the mobile station is to perform a periodic search
- 33 on the Candidate Frequency.
- 34 **PGSLOT** – Value obtained from the hashing function, used to determine the mobile
- 35 station's assigned Paging Channel slots.
- 36 **PILOT_ARRIVAL** – Time of occurrence, as measured at the mobile station antenna
- 37 connector, of the earliest arriving usable multipath component of the pilot. The arrival
- 38 time is measured relative to the mobile station's time reference.

- 1 **PILOT_GATING_RATE_s** – Reverse pilot gating rate on the Reverse Pilot Channel.
- 2 **PILOT_GATING_USE_RATE** – Reverse pilot gating rate enable indicator. It indicates
3 whether or not the Reverse Pilot Channel is gated.
- 4 **PILOT_INC_s** – Pilot PN sequence offset index increment. The interval between pilots, in
5 units of 64 PN chips, for base stations in a system.
- 6 **PILOT_PN_s** – Pilot Channel PN sequence offset, in units of 64 PN chips, for a base station.
- 7 **PILOT_PN_PHASE** – Calculated Pilot Channel PN phase, in chips, including the PN
8 sequence offset and the arrival time relative to the mobile station's time reference.
- 9 **PILOT_REPORT_s** – Pilot reporting indicator.
- 10 **POWER_DOWN_REG_s** – Power down registration enable indicator.
- 11 **POWER_UP_REG_s** – Power up registration enable indicator.
- 12 **PPSM_PERIOD_s** – The period used in the Periodic Serving Frequency Pilot Report
13 Procedure.
- 14 **PRAT_s** – Data rate of the Paging Channels.
- 15 **P_REV_s** – Protocol revision level supported by a base station.
- 16 **P_REV_IN_USE_s** – Protocol revision level currently in use by a mobile station.
- 17 **PREF_MSID_TYPE_s** – Preferred mobile station identifier field type.
- 18 **PREVIOUS_ACTIVE_PILOT_s** – Identifies the pilot, if any, which was in the Active Set
19 immediately prior to the current pilot in the Active Set, during the current access attempt.
- 20 **PRI_NGHBR_LIST_s** – *Private Neighbor List Message* sent indicator.
- 21 **PRI_NGHBR_PN** – Private Neighbor base station Pilot Channel PN sequence offset in units
22 of 64 PN chips.
- 23 **PRI_NGHBR_REC** – Record containing information about a private neighbor base station
24 (see also PRI_NGHBR_REC_LIST).
- 25 **PRI_NGHBR_REC_LIST** – Private neighbor base station record list. A descriptive structure
26 used to manage the base station's information records about private neighbor base
27 stations (see also PRI_NGHBR_REC).
- 28 **PRI_NGHBR_LST_MSG_SEQ_s** – *Private Neighbor List Message* sequence number.
- 29 **PROBE_BKOFF_s** – Access Channel probe backoff range, in slots.
- 30 **PROBE_PN_RAN_s** – Range for hashing function selection of the delay prior to transmission
31 of Access Channel probes. Value is $\log_2(\text{range} + 1)$.
- 32 **PSIST_s** – Persistence value for the mobile station's overload class.
- 33 **PUF_FREQ_INCL_s** – Flag to indicate whether the mobile station is to transmit a PUF probe
34 on the serving frequency or on a target frequency.
- 35 **PUF_INIT_PWR_s** – Power increase (in dB) of the first PUF pulse in a PUF attempt.
- 36 **PUF_INTERVAL_s** – Number of frames between the start of each PUF probe.

- 1 **PUF_PULSE_SIZE_s** – Duration of a PUF pulse in power control groups.
- 2 **PUF_PWR_STEP_s** – Amount (in dB) by which the mobile station is to increment the power
- 3 of a PUF pulse above nominal power from one PUF pulse to the next.
- 4 **PUF_SETUP_SIZE_s** – Number of power control groups within a PUF probe before the
- 5 transmission of the PUF pulse.
- 6 **PUF_SF_CDMABAND_s** – Serving Frequency CDMA band class.
- 7 **PUF_SF_CDMACH_s** – Serving Frequency CDMA Channel number.
- 8 **PUF_TF_CDMABAND_s** – Target Frequency CDMA band class.
- 9 **PUF_TF_CDMACH_s** – Target Frequency CDMA Channel number.
- 10 **PUF_TX_PWR_s** – Mobile station's output power for the PUF pulse.
- 11 **PWR_CNTL_STEP_s** – Power control step size assigned by the base station that the mobile
- 12 station is to use for closed loop power control.
- 13 **PWR_PERIOD_ENABLE_s** – Forward power control periodic reporting enabled indicator.
- 14 **PWR_REP_DELAY_s** – Power report delay. The period that the mobile station waits
- 15 following an autonomous *Power Measurement Report* before restarting frame counting for
- 16 power control purposes.
- 17 **PWR_REP_FRAMES_s** – Power control reporting frame count. The number of frames over
- 18 which the mobile station is to count frame errors. Value is $2 \times \log_2(\text{frames} / 5)$.
- 19 **PWR_REP_THRESH_s** – Power control reporting threshold. The number of bad frames to be
- 20 received in a measurement period before the mobile station is to generate a *Power*
- 21 *Measurement Report Message*.
- 22 **PWR_STEP_s** – Power increment for successive access probes, in units of 1.0 dB.
- 23 **PWR_THRESH_ENABLE_s** – Forward power control threshold reporting enabled indicator.
- 24 **QPAGECH_s** – Current Quick Paging Channel number.
- 25 **QPCH_CCI_SUPPORTED_s** – Flag to indicate if configuration change indicators are
- 26 supported on the Quick Paging Channel.
- 27 **QPCH_POWER_LEVEL_PAGE_s** – Relative power level of the transmitted Quick Paging
- 28 Channel Paging Indicator modulation symbols, relative to the Forward Pilot Channel.
- 29 **QPCH_POWER_LEVEL_CONFIG_s** – Relative power level of the transmitted Quick Paging
- 30 Channel Configuration Change Indicator modulation symbols, relative to the Forward Pilot
- 31 Channel.
- 32 **QPCH_RATE_s** – Indicator rate of the current Quick Paging Channel(s).
- 33 **QPCH_SUPPORTED_s** – Flag to indicate if the Quick Paging Channel is supported by the
- 34 base station.
- 35 **RA** – Random access channel number. The Access Channel number generated (pseudo-
- 36 randomly) by the mobile station.
- 37 **RAND_s** – Authentication random challenge value.

- 1 **RANDC** – The eight most-significant bits of the random challenge value used by the mobile
2 station.
- 3 **RANDOM_TIME** – Random time. A portion of **SYS_TIME** used to seed the random number
4 generator.
- 5 **RC_CAP_REQUESTED_s** – Radio Configuration Capability indicator. When set to “1” the
6 mobile station shall include the Radio Configuration capabilities that it supports in the
7 *Origination Message and Page Response Message*.
- 8 **RC_REQ_PENDING** – Resource Control Request Pending Indicator. This flag, when set to
9 ‘1’, indicates that a Resource Control initiated request is pending at the mobile station.
- 10 **REDIRECTION_s** – Service redirection indicator. Set to enabled to indicate that service
11 redirection is currently in effect; otherwise, set to disabled.
- 12 **REDIRECT_REC_s** – Holds the service redirection criteria specified in the redirection record
13 of the most recently received *Global Service Redirection Message* or *Service Redirection*
14 *Message*.
- 15 **REG_COUNT_s** – The timer-based registration counter.
- 16 **REG_COUNT_MAX_s** – Timer-based registration count limit. The timer-based registration
17 counter expiration value computed from **REG_PRD_r**.
- 18 **REG_DIST_s** – Registration distance. Distance from last registration that causes a
19 distance-based registration to occur.
- 20 **REG_ENABLED_s** – Autonomous registrations enabled indicator.
- 21 **REGISTERED_s** – Mobile station registered indicator.
- 22 **REG_PRD_s** – Registration period. The time interval between timer-based registrations.
23 Value is $4 \times \log_2(\text{time} / 0.08 \text{ s})$.
- 24 **REG_PSIST_s** – Persistence modifier for registration accesses (except ordered registrations).
- 25 **REG_ZONE_s** – Registration zone number of the base station.
- 26 **REJECT_UZID_s** – User Zone identifier of the User Zone rejected by the base station.
- 27 **RESELECT_INCLUDED_s** – System reselection information included indicator. When this
28 is set to ‘1’, the system reselection procedure is enabled.
- 29 **RESUME_PREAMBLE_s** – A storage variable in the mobile station that contains the size of
30 the preamble that shall be transmitted on a Reverse Supplemental Code Channel at the
31 beginning of transmission on a Reverse Supplemental Code Channel when resuming
32 transmission following an interruption when discontinuous transmission is occurring.
- 33 **RETRY_DELAY_s** – A storage variable in the mobile station that contains the system time
34 prior to which the mobile station may not transmit any *Supplemental Channel Request*
35 *Messages*. A value of 0 indicates no retry delay is in effect, and a value of ‘11111111’
36 indicates an infinite retry delay.
- 37 **RETURN_CAUSE_s** – Reason for the mobile station registering or accessing the system.

1 **RETURN_IF_FAIL_s** – Return if fail indicator. Set to '1' to indicate that mobile station is to
2 return to the system from which it was redirected if it fails to acquire service on a system
3 using specified redirection criteria. Otherwise, set to '0'.

4 **RETURN_IF_HANDOFF_FAIL_s** – Return if handoff fail indicator. Indicates if the mobile
5 station is to resume using the Active Set on the Serving Frequency following an
6 unsuccessful hard handoff attempt.

7 **REV_DTX_DURATION_s** – Maximum duration of time in units of 20 ms that the mobile
8 station is allowed to stop transmitting on a Reverse Supplemental Code Channel or
9 Reverse Supplemental Channel within the reverse assignment duration.

10 **REV_DURATION_s** – A stored variable in the mobile station that contains the duration (in
11 units of 80 ms) of the Reverse Supplemental Code Channel transmission that will begin at
12 time REV_START_TIME_s.

13 **REV_FCH_RC_s** – Reverse Fundamental Channel Radio Configuration.

14 **REV_FRAME_40_MAX_RATE_s** – The maximum data rate for the mobile station's
15 transmission at 40 ms frame length on the Reverse Supplemental Channel.

16 **REV_FRAME_80_MAX_RATE_s** – The maximum data rate for the mobile station's
17 transmission at 80 ms frame length on the Reverse Supplemental Channel.

18 **REV_LINKED_HDM_SEQ_s** – Storage variable containing the most recent reverse sequence
19 number of the *General Handoff Direction Message* to which a *Supplemental Channel*
20 *Assignment Message* reverse assignment was linked.

21 **REV_RC_s** – Reverse Channel Radio Configuration.

22 **REV_SCH_DTX_DURATION_s** – Maximum duration of time in units of 20 ms that the
23 mobile station is allowed to stop transmitting on a Reverse Supplemental Channel within
24 the reverse assignment duration.

25 **REV_SCH_DURATION_s** – A stored variable in the mobile station which contains the
26 duration of the Reverse Supplemental Channel transmission which will begin at time
27 REV_SCH_START_TIME_s.

28 **REV_SCH_FRAME_LENGTH_s** – The Reverse Supplemental Channel frame length.

29 **REV_SCH_START_TIME_s** – A stored variable in the mobile station which contains the
30 System Time, in units of time specified by START_TIME_UNIT_s, (modulo 32) at which the
31 mobile station shall start (or resume) processing Reverse Supplemental Channels.

32 **REV_START_TIME_s** – A stored variable in the mobile station that contains the next 80 ms
33 frame boundary (modulo 64) on which the mobile station is assigned to start Reverse
34 Supplemental Code Channel transmission.

35 **RN_HASH_KEY_s** – Name of an internal variable having the same value as the mobile
36 station's ESN. This variable is used by procedures defined in 3GPP2 C.S0003-0.

37 **ROAM_IND_s** – Enhanced roaming indicator used for mobile station roaming condition
38 display.

- 1 **RS** - Inter-probe sequence backoff. The delay in slots generated (pseudorandomly) by the
- 2 mobile station following an unsuccessful access probe sequence or prior to the first access
- 3 probe in a response attempt.
- 4 **RT** - Inter-probe backoff. The delay in slots generated (pseudorandomly) by the mobile
- 5 station following an unacknowledged access probe.
- 6 **SCC_s** - SAT color code for analog channel assignment and CDMA-to-analog handoff.
- 7 **SCAM_FOR_DURATION_MODE_s** - Indicator for a specific or an indefinite Forward
- 8 Supplemental Code Channel assignment duration.
- 9 **SCAM_FOR_ORDER_s** - The stop or start command set by a *Supplemental Channel*
- 10 *Assignment Message* that is linked to a *General Handoff Direction Message*.
- 11 **SCAM_REV_DURATION_MODE_s** - Indicator for a specific or an indefinite Reverse
- 12 Supplemental Code Channel assignment duration.
- 13 **SCRM_SEQ_NUM_s** - Storage variable containing the most recently transmitted
- 14 *Supplemental Channel Request Message* sequence number.
- 15 **SEARCH_MODE_s** - Search mode to be used in a periodic search on the Candidate
- 16 Frequency.
- 17 **SEARCH_OFFSET_s** - Time offset of the start of the first search from the action time of the
- 18 *Candidate Frequency Search Request Message* or the *Candidate Frequency Search Control*
- 19 *Message* that starts a search.
- 20 **SEARCH_PERIOD_s** - Period for search on the Candidate Frequency.
- 21 **SEARCH_PRIORITY_s** - Neighbor Pilot Channel search priority.
- 22 **SEARCH_PRIORITY_INCL_s** - Search priorities included indicator.
- 23 **SEARCH_TIME_RESOLUTION_s** - Unit of delay used in the *Candidate Frequency Search*
- 24 *Report Message* to report the total and maximum times away from the Serving Frequency.
- 25 **SERV_NEG_s** - Service negotiation indicator. Indicates whether the mobile station is to use
- 26 service negotiation or service option negotiation.
- 27 **SERV_REQ_NUM_s** - Service request sequence number. Sequence number to use when
- 28 requesting a new service configuration.
- 29 **SERVSYS_s** - Selected serving system indicator for Band Class 0. Set to SYS_A if the
- 30 mobile station operates in system A; otherwise, set to SYS_B.
- 31 **SETTING_SEARCH_WIN** - SRCH_WIN_NGHBR Setting flag. Set to '1' if the mobile station
- 32 shall set the SRCH_WIN_NGHBR field of each NGHBR_REC to SEARCH_WIN_N_s for all
- 33 NGHBR_SET_SIZE_s entries upon receiving the *System Parameters Message*.
- 34 **SF_ADD_INTERCEPT_s** - Intercept of the handoff add criterion for the Serving Frequency,
- 35 stored during hard handoff.
- 36 **SF_CDMABAND_s** - Serving Frequency CDMA band class, stored during hard handoff.
- 37 **SF_CDMACH_s** - Serving Frequency CDMA Channel number, stored during hard handoff.

- 1 **SF_CODE_CHAN_LIST_s** - Serving Frequency Code Channel List, stored during hard
2 handoff.
- 3 **SF_DROP_INTERCEPT_s** - Intercept of the handoff drop criterion for the Serving
4 Frequency, stored during hard handoff.
- 5 **SF_ENCRYPT_MODE_s** - Message encryption indicator for the Serving Frequency, stored
6 during hard handoff.
- 7 **SF_FRAME_OFFSET_s** - Traffic Channel frame offset used on the Serving Frequency,
8 stored during hard handoff.
- 9 **SF_NOM_PWR_s** - Nominal transmit power offset used on the Serving Frequency, stored
10 during hard handoff.
- 11 **SF_NOM_PWR_EXT_s** -Extended nominal transmit power offset indicator for the Serving
12 Frequency, stored during hard handoff.
- 13 **SF_P_REV_s** - Protocol revision level supported by the base station on the Serving
14 Frequency.
- 15 **SF_P_REV_IN_USE_s** - Protocol revision level currently used by the mobile station on the
16 Serving Frequency.
- 17 **SF_PRIVATE_LCM_s** - Private long code mask indicator for the Serving Frequency, stored
18 during hard handoff.
- 19 **SF_SERV_NEG_s** - Service negotiation indicator for the Serving Frequency, stored during
20 hard handoff.
- 21 **SF_SERVICE_CONFIG_s** - Service configuration record for the Serving Frequency.
- 22 **SF_SOFT_SLOPE_s** - Slope of the handoff add/drop criterion for the Serving Frequency,
23 stored during hard handoff.
- 24 **SF_SRCH_WIN_A_s** - Search window size for the Active Set and Candidate Set used on the
25 Serving Frequency, stored during hard handoff.
- 26 **SF_SRCH_WIN_N_s** - Search window size for the Neighbor Set used on the Serving
27 Frequency, stored during hard handoff.
- 28 **SF_SRCH_WIN_R_s** - Search window size for the Remaining Set used on the Serving
29 Frequency, stored during hard handoff.
- 30 **SF_T_ADD_s** - Pilot detection threshold used on the Serving Frequency, stored during hard
31 handoff.
- 32 **SF_T_COMP_s** - Active Set versus Candidate Set comparison threshold used on the Serving
33 Frequency, stored during hard handoff.
- 34 **SF_T_DROP_s** - Pilot drop threshold used on the Serving Frequency, stored during hard
35 handoff.
- 36 **SF_T_TDROP_s** - Pilot drop timer value used on the Serving Frequency, stored during hard
37 handoff.

- 1 **SF_TOTAL_EC_THRESH_s** - Threshold for total E_c of pilots in the Serving Frequency Active
- 2 Set used in the Candidate Frequency periodic search procedures.
- 3 **SF_TOTAL_EC_IO_THRESH_s** - Threshold for total E_c/I_o of pilots in the Serving Frequency
- 4 Active Set used in the Candidate Frequency periodic search procedures.
- 5 **SID_s** - System identifier.
- 6 **SID_NID_LIST_s** - Registration SID, NID list. The SID, NID pairs in which the mobile
- 7 station has registered.
- 8 **SLOT_CYCLE_INDEX_s** - Slot cycle index. Equal to the smaller of **SLOT_CYCLE_INDEX_p**
- 9 and the received maximum slot cycle index.
- 10 **SLOT_NUM** - Paging Channel slot number.
- 11 **SOFT_SLOPE_s** - The slope in the inequality criterion for adding a pilot to the Active Set, or
- 12 dropping a pilot from the Active Set.
- 13 **SO_FROM_RC_s** - Service Option received from the Resource Control.
- 14 **SO_REQ_s** - Service option request number. The number of the service option requested by
- 15 the mobile station during service option negotiation.
- 16 **SRCH_OFFSET_INCL_s** - Neighbor pilot search window offset included indicator.
- 17 **SRCH_OFFSET_NGHR_s** - Neighbor pilot search window offset.
- 18 **SRCH_WIN_A_s** - Search window size for the Active Set and Candidate Set.
- 19 **SRCH_WIN_NGHR_s** - Neighbor Pilot Channel search window size.
- 20 **SRCH_WIN_NGHR_INCL_s** - Neighbor Pilot Channel search window size included
- 21 indicator.
- 22 **SRCH_WIN_N_s** - Search window size for the Neighbor Set.
- 23 **SRCH_WIN_R_s** - Search window size for the Remaining Set.
- 24 **START_TIME_UNIT_s** - A stored variable in the mobile station which contains the time unit
- 25 used for determining **FOR_SCH_START_TIME** and **REV_SCH_START_TIME** on
- 26 Supplemental Channels.
- 27 **RC_SYNC_ID_s** - Resource Control Synchronization Identifier (see 3GPP2 C.S0003-0). This
- 28 4-bit parameter is used to ensure that, when the mobile station enters the *Control on the*
- 29 *Traffic Channel State*, the Resource Control at the mobile station and the Resource
- 30 Control at the base station are synchronized. When the mobile station and the base station
- 31 release all the physical channels, this parameter is updated based on a random value
- 32 generated by the base station.
- 33 **SYS_PAR_MSG_SEQ_s** - *System Parameters Message* sequence number.
- 34 **SYS_TIME_s** - Current value of CDMA system time as received in the *Sync Channel*
- 35 *Message*.
- 36 **TA** - Acknowledgment response timeout.
- 37 **T_ADD_s** - Pilot detection threshold.

- 1 **T_COMP_s** – Active Set versus Candidate Set comparison threshold.
- 2 **T_DROP_s** – Pilot drop threshold.
- 3 **TEMP_SUB_s** – User Zone temporary subscription flag.
- 4 **TF_CDMABAND_s** – Target Frequency CDMA band class. The CDMA band class specified
- 5 in the *Extended Handoff Direction Message* or the *General Handoff Direction Message*.
- 6 **TF_CDMACH_s** – Target Frequency CDMA Channel number. The CDMA Channel number
- 7 specified in the *Extended Handoff Direction Message* or the *General Handoff Direction*
- 8 *Message*.
- 9 **TF_RESET_FPC_s** – Flag to initialize the Forward Traffic Channel power control counters
- 10 on the Target Frequency.
- 11 **TF_RESET_L2_s** – Flag to reset acknowledgment procedures on the Target Frequency.
- 12 **TF_T_ADD_s** – Pilot detection threshold to be used on the Target Frequency.
- 13 **TF_WAIT_TIME_s** – Maximum time that the mobile station may wait to receive a good frame
- 14 when acquiring the CDMA Candidate Frequency.
- 15 **TMSI_ZONE_s** – TMSI zone number of the base station.
- 16 **TMSI_ZONE_LEN_s** – The number of octets in TMSI zone.
- 17 **T_MULCHAN_s** – A storage variable in the mobile station that contains the Reverse
- 18 Supplemental Code Channel neighbor pilot strength measurement offset.
- 19 **TOTAL_PUF_PROBES_s** – Maximum number of PUF probes transmitted in a PUF attempt.
- 20 **TOTAL_ZONES_s** – Number of registration zones to be retained in **ZONE_LIST_s**.
- 21 **TOT_FRAMES_s** – Total frames received. The total number of received frames, counted for
- 22 Forward Traffic Channel power control.
- 23 **T_TDROP_s** – Pilot drop timer value.
- 24 **USE_FOR_HDM_SEQ_s** – Storage variable containing a flag indicating a pending
- 25 Supplemental Channel Assignment Message forward assignment that is linked to a
- 26 *General Handoff Direction Message*.
- 27 **USE_REV_HDM_SEQ_s** – Storage variable containing a flag indicating a pending
- 28 Supplemental Channel Assignment Message reverse assignment that is linked to a *General*
- 29 *Handoff Direction Message*.
- 30 **USE_T_ADD_ABORT_s** – A storage variable in the mobile station that contains the Reverse
- 31 Supplement Code Channel assignment T_ADD abort indicator.
- 32 **USE_TMSI_s** – Base station's preference of the use of TMSI.
- 33 **USER_ZONE_ID_s** – *User Zone Identification Message* sent indicator.
- 34 **USER_ZONE_ID_MSG_SEQ_s** – *User Zone Identification Message* sequence number.
- 35 **UZ_EXIT_IN_USE_s** – The User Zone Exit parameter that the mobile station received from
- 36 the *User Zone Identification Message* broadcast by the last base station of the old user
- 37 zone.

- 1 **UZ_EXIT_RCVD_s** - The User Zone Exit parameter that the mobile station just received
- 2 from the *User Zone Identification Message* broadcast by the currently serving base station.
- 3 **UZID_s** - User Zone identifier.
- 4 **UZ_REC** - Record containing information about a User Zone broadcast by the base station
- 5 (see also UZ_REC_LIST).
- 6 **UZ_REC_LIST** - Broadcast User Zone record list. A descriptive structure used to manage
- 7 the base station's information records about broadcast User Zones (see also UZ_REC).
- 8 **UZ_REV_s** - User Zone update revision number.
- 9 **VMAC_s** - Analog voice mobile station attenuation code for analog channel assignment or
- 10 CDMA-to-analog handoff.
- 11 **ZONE_LIST_s** - Registration zone list. List of zones in which the mobile station has
- 12 registered.
- 13 **ZONE_TIMER_s** - Zone timer length.
- 14

1.2 Signaling Architecture

Layer 3 signaling for cdma2000 is modeled as follows:

- **Planes.** There are two planes: the **Data Plane**¹ (used for the signaling protocol) and the **Control Plane** (used for supervision of the protocol according to functional requirements).
- **Protocol Layer.** Layer 3 generates Layer 3 PDUs and passes these PDUs to Lower Layers, where proper encapsulation into Lower Layer PDUs is performed. On the receiving end, Lower Layer PDUs are decapsulated and the resulting SDUs are sent from Lower Layers to Layer 3 for processing.
- **Service Access Points.** SAPs and corresponding communication primitives are defined between the Layer 3 and Lower Layers over the data plane. No SAPs are defined for communications through the control plane.

1.3 Signaling and Functionality

1.3.1 Control Plane and Data Plane

The general architecture is presented in two planes: Control Plane, where processing decisions are made, and Data Plane, where the PDUs are generated and processed and transferred. The Data Plane contains the protocol, and is layered.

¹ User traffic of various types also passes through the Data Plane, but further description is outside the scope of this document. Signaling is just another type of traffic whose users are the control entities in the base station and mobile station.

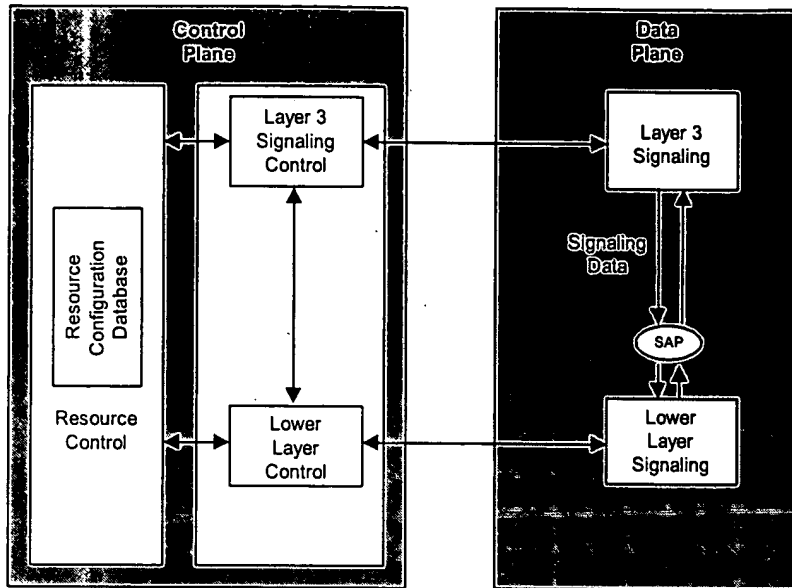


Figure 1.3.1-1. IS-2000 Signaling - General Architecture

1.3.2 Interface to Layer 2

The interface between Layer 3 and Layer 2 is a Service Access Point (SAP). At the SAP, Layer 3 and Layer 2 exchange Service Data Units (SDU) and interface control information in the form of Message Control and Status Blocks (MCSB) using a set of primitives.

1.3.2.1 Message Control and Status Block (MCSB)

The MCSB is a parameter block for the defined primitives, containing relevant information about an individual Layer 3 message (PDU), as well as instructions on how the message may be handled or how it is to be (for transmission), or was (for reception), processed by Layer 2. The MCSB is a conceptual construct and is not subject to detailed specification in this document; however, it is envisioned the MCSB will contain information such as:

- The MSG_TAG. If the message is generated in response to a previously received message, the MSG_TYPE of the previously received message is also stored.
- The length of the PDU.
- A unique instance identifier associated with the message, which enables identification of a message for notifications of delivery/non-delivery or recovery procedures.
- Whether the message should be acknowledged at Layer 2 (i.e., delivered in assured mode or unassured mode).
- Whether notification of delivery is required.
- The identity of the addressee for the message.
- Whether the PDU delivered to Layer 3 is a duplicate (in cases where Layer 2 does not discard duplicates).

- Data needed by the authentication procedures (e.g., the CHARi fields of the *Origination Message*).
- Relevant PDU classification (e.g., registrations, originations), where processing at Layer 2 is sensitive to the kind of PDU being transferred.
- The encryption status of the logical channel.
- CDMA System Time corresponding to the frame in which the first or last bit of a message was received.
- Transmission instructions for Layer 2, such as an instruction to send a message with a certain priority (before, after, or by interrupting the transmission of other messages), an instruction regarding supervision, and so on.
- Abnormal conditions indications from Layer 2.

1.3.2.2 Interface Primitives

The following primitives are defined for communication between the Layer 3 and Layer 2:

Name: L2-Data.Request

Type: Request

Direction: Layer 3 to Layer 2

Parameters: PDU, MCSB

Action: The PDU is handed to Layer 2 for delivery across the radio interface.

Name: L2-Data.Confirm

Type: Confirm

Direction: Layer 2 to Layer 3

Parameters: MCSB

Action: Reception of the specified (in the MCSB) transmitted PDU was acknowledged at Layer 2 by the addressee.

Name: L2-Data.Indication

Type: Indication

Direction: Layer 2 to Layer 3

Parameters: PDU, MCSB

Action: The received PDU is handed to Layer 3.

Name: L2-Condition.Notification

1 Type: Indication
2 Direction: Layer 2 to Layer 3
3 Parameters: MCSB
4 Action: Layer 3 is notified of a relevant event (e.g. abnormal condition) detected at
5 Layer 2. Details are indicated via the MCSB.
6
7 Name: **L2-Supervision.Request**
8 Type: Request
9 Direction: Layer 3 to Layer 2
10 Parameters: MCSB
11 Action: Layer 2 executes a control command as directed by Layer 3. This could be,
12 for example, an order to abandon retransmission of a message or an order
13 for local reset for the message sequence number, acknowledgment sequence
14 number and duplicate detection.

15 1.3.3 Resource Control - Layer 3 Signaling Control Interface Primitives

16 The interface primitives exchanged between the Resource Control and the Layer 3
17 Signaling Control are listed in Table 1.3.3-1, Table 1.3.3-2, and Table 1.3.3-3. The
18 following primitives are defined:

- 19 • SIG-Allocate (see Tables 1.3.3-1 and 1.3.3-2)
- 20 • SIG-Release (see Tables 1.3.3-1 and 1.3.3-2)
- 21 • SIG-Send (see Table 1.3.3-3)
- 22 • SIG-Receive (see Table 1.3.3-3)
- 23 • RC-Reset (see Table 1.3.3-3)
- 24 • SIG-UpdateServiceInfo (see Table 1.3.3-3)

25 The SIG-Allocate.Request primitive carries four parameters:

- 26 1. List of Resources – This is a set of tags that identify what resources the Resource
27 Control requires to be connected. The possible tags are as follows:
 - 28 - “SO_INSTANCE”: The presence of this tag indicates that the SO parameter
29 corresponds to a new service option connection request.
 - 30 - “FCH”: Indicates Fundamental Channel.
 - 31 - “DCCH”: Indicates Dedicated Control Channel.
 - 32 - “CONT_REV_PILOT”: Indicates continuous reverse pilot. If present, it denotes
33 starting continuous reverse pilot operation.
- 34 2. SO (service option) – This 16-bit field carries the service option number, so. If
35 NULL is indicated, it denotes that this parameter has no valid value.

3. CON_REF (connection reference) - This 8-bit field carries the connection reference number, con_ref. For the SIG-Allocate.Request primitive, this parameter is always set to 'NULL', denoting that this parameter has no valid value.
4. BLOB - This 7-bit field carries a block of bits, blob, to be delivered from the Resource Control at the mobile station (or the base station) to the peer Resource Control at the base station (or the mobile station). This field is not interpreted by Layer 3 and Layer 3 signaling transports this field transparently over the air.

When an SIG-Allocate.Request primitive is received by the Layer 3 signaling control, the Layer 3 signaling takes the following actions based on the value of each of the parameters carried by the primitive:

- SIG-Allocate.Request(("SO_INSTANCE", {"FCH", "DCCH", or both}), so, NULL, blob):
 - Layer 3 establishes the Fundamental Channel, Dedicated Control Channel, or both as indicated.
 - Layer 3 connects the service option given by the service option number, so.
 - Layer 3 initiates continuous reverse pilot operation.
 - Layer 3 of the requesting entity transports the blob parameter over the air to the peer entity, to be delivered to the Resource Control.
- SIG-Allocate.Request({"FCH", "DCCH", or both}, so, NULL, blob):
 - Layer 3 establishes the Fundamental Channel, Dedicated Control Channel, or both as indicated.
 - Layer 3 restores the stored service option connections.
 - Layer 3 initiates continuous reverse pilot operation.
 - Layer 3 of the requesting entity transports the blob parameter over the air to the peer entity, to be delivered to the Resource Control.
- SIG-Allocate.Request(("SO_INSTANCE"), so, NULL, blob):
 - Layer 3 connects the service option given by the service option number, so.
 - Layer 3 of the receiving entity transports the blob parameter over the air to the peer entity, to be delivered to the Resource Control.
- SIG-Allocate.Request({{"FCH" or "DCCH"} and/or "CONT_REV_PILOT"}, NULL, NULL, blob):
 - Layer 3 establishes the Fundamental Channel or the Dedicated Control Channel, if indicated.
 - Layer 3 initiates continuous reverse pilot operation, if the "CONT_REV_PILOT" tag is present.
 - Layer 3 of the requesting entity transports the blob parameter over the air to the peer entity, to be delivered to the Resource Control.

It should be noted that, when a service option number is passed in a SIG-Allocate.Request

primitive, it is intended as the service option connection to be established by Layer 3. The alternative service options and the service negotiation policy that might be required by the Layer 3 is assumed to be known to the Layer 3, although they are not explicitly passed in the SIG-Allocate.Request primitive.

The SIG-Release.Request primitive carries four parameters:

1. List of Resources – This is a set of tags that identify what resources the Resource Control requires to be released. The possible tags are as follows:
 - “SO_INSTANCE”: The presence of this tag indicates that the CON_REF parameter carries a valid value.
 - “FCH”: Indicates Fundamental Channel.
 - “DCCH”: Indicates Dedicated Control Channel.
 - “CONT_REV_PILOT”: Indicates continuous reverse pilot. If present, it denotes turning-off the continuous reverse pilot operation (i.e. gated mode of operation).
2. SO (service option) – This 16-bit field carries the service option number, so. For the SIG-Release.Request primitive, this parameter is always set to ‘NULL’, denoting that this parameter has no valid value.
3. CON_REF (connection reference) – This 8-bit field carries the connection reference number, con_ref. If NULL is indicated, it denotes that this parameter has no valid value.
4. BLOB – This 7-bit field carries a block of bits, blob, to be delivered from the Resource Control at the mobile station (or the base station) to the peer Resource Control at the base station (or the mobile station). This field is not interpreted by Layer 3 and Layer 3 signaling transports this field transparently over the air.

When a SIG-Release.Request primitive is received by the Layer 3 signaling control, the Layer 3 signaling takes the following actions based on the value of each of the parameters carried by the primitive:

- SIG-Release.Request(“SO_INSTANCE”, {“FCH”, “DCCH”, or both}, NULL, con_ref, blob):
 - Layer 3 releases the Fundamental Channel, Dedicated Control Channel, or both as indicated.
 - Layer 3 disconnects the service option with a connection reference given by the connection reference number, con_ref.
 - Layer 3 of the requesting entity transports the blob parameter over the air to the peer entity, to be delivered to the Resource Control.
- SIG-Release.Request(“FCH”, “DCCH”, or both, NULL, NULL, blob):

- 1 - Layer 3 releases the Fundamental Channel, Dedicated Control Channel, or both
- 2 as indicated.
- 3 - Layer 3 of the requesting entity transports the blob parameter over the air to the
- 4 peer entity, to be delivered to the Resource Control.
- 5 • SIG-Release.Request(("SO_INSTANCE"), NULL, con_ref, blob):
- 6 - Layer 3 disconnects the service option with a connection reference given by the
- 7 connection reference number con_ref.
- 8 - Layer 3 of the requesting entity transports the blob parameter over the air to the
- 9 peer entity, to be delivered to the Resource Control.
- 10 • SIG-Release.Request(("FCH" or "DCCH" and/or "CONT_REV_PILOT"), NULL,
- 11 NULL, blob):
- 12 - Layer 3 releases the Fundamental Channel or the Dedicated Control Channel, if
- 13 indicated.
- 14 - Layer 3 initiates gated reverse pilot operation, if the "CONT_REV_PILOT" tag is
- 15 present.
- 16 - Layer 3 of the requesting entity transports the blob parameter over the air to the
- 17 peer entity, to be delivered to the Resource Control.

18 Upon completion of the actions requested by the SIG-Allocate.Request or the SIG-
 19 Release.Request primitive, Layer 3 signaling control informs the Resource Control, at both
 20 the mobile station and the base station. If the original request came from the Resource
 21 Control at the mobile station (or the base station), then a SIG-Allocate.Confirm or a SIG-
 22 Release.Confirm primitive is sent to the Resource Control at the mobile station (or the base
 23 station) and a SIG-Allocate.Indication or a SIG-Release.Indication is sent to the Resource
 24 Control at the base station (or mobile station), as appropriate.

25 The SIG-Allocate.Confirm and SIG-Allocate.Indication primitives carry the following five
 26 parameters:

- 27 1. List of Resources – This is a set of tags that identify what resources were allocated.
 28 The possible tags are as follows:
- 29 - "SO_INSTANCE": The presence of this tag indicates that both SO and CON_REF
 30 parameters carry a valid value.
- 31 - "FCH": Indicates Fundamental Channel.
- 32 - "DCCH": Indicates Dedicated Control Channel.
- 33 - "CONT_REV_PILOT": Indicates continuous reverse pilot. If present, it denotes
 34 starting the continuous reverse pilot.
- 35 2. SSR_ID – Signaling Service Reference Identifier. If a service option was connected,
 36 this field is set to the value of the forward traffic type assigned to that service
 37 option connection. If NULL is indicated, it denotes that this parameter has no valid

1 value.

2 3. SO (service option) – If a service option was connected, this parameter carries the
3 service option number connected. If NULL is indicated, it denotes that this
4 parameter has no valid value.

5 4. CON_REF (connection reference) – If a service option was connected, this
6 parameter carries the connection reference number, con_ref, assigned to the
7 service option connection by Layer 3 Signaling. If NULL is indicated, it denotes that
8 this parameter has no valid value.

9 5. BLOB – This parameter carries the 7-bit block of bits, blob, provided by the
10 Resource Control.

11 The SIG-Release.Confirm and SIG-Release.Indication primitives carry the following four
12 parameters:

13 1. List of Resources – This is a set of tags that identify what resources were released.
14 The possible tags are as follows:

15 - "SO_INSTANCE": The presence of this tag indicates that the CON_REF
16 parameter carries a valid value.

17 - "FCH": Indicates Fundamental Channel.

18 - "DCCH": Indicates Dedicated Control Channel.

19 - "CONT_REV_PILOT": Indicates continuous reverse pilot. If present, it denotes
20 turning-off the continuous reverse pilot operation (i.e. gated mode of operation).

21 2. SO (service option) – This 16-bit field carries the service option number, so. This
22 parameter is always set to 'NULL', denoting that this parameter has no valid value.

23 3. CON_REF (connection reference) – If a service option connection was released, this
24 parameter carries the connection reference number, con_ref, of the released service
25 option connection. If NULL is indicated, it denotes that this parameter has no valid
26 value.

27 4. BLOB – This parameter carries the 7-bit block of bits, blob, provided by the peer
28 Resource Control. If NULL is indicated, it denotes that this parameter has no valid
29 value.

30 The SIG-Send.Request and SIG-Receive.Indication primitives carry one parameter,
31 PP_BLOB. This 13-bit field carries a block of bits, pp_blob. This parameter is delivered to
32 Layer 3 signaling by the Resource Control at the mobile station and is to be carried over
33 the air, encapsulated within a *Peer-to-Peer Resource Control (Mini) Message*, to the base
34 station, where it is delivered to the peer Resource Control by the Layer 3 signaling. This
35 field is not interpreted by Layer 3 and Layer 3 signaling transports this field transparently

over the air.

The RC-Reset.Request primitive does not carry any parameters and is sent by the Layer 3 signaling to the Resource Control. It requests that the Resource Control reset the PLICFs associated with each service option connection since the base station Resource Control PLICFs and the mobile station Resource Control PLICFs are out of sync.

The SIG-UpdateServiceInfo.Indication primitive is used to inform the Resource Control that a service option connection has been replaced by a new service option connection or the traffic type of the service option connection has been changed. This primitive carries four parameters:

1. SSR_ID – Signaling Service Reference Identifier. For the case of replacement of a service option connection, this field is set to the current value of the forward traffic type of the service option connection; for the case of change in the traffic type of the service option connection, this field is set to the previous value of the forward traffic type.
2. NEW_SSR_ID – New Signaling Service Reference Identifier. For the case of replacement of a service option connection, this field is set to the current value of the forward traffic type of the service option connection; for the case of change in the traffic type of the service option connection, this field is set to the new value of the forward traffic type.
3. SO – Service Option. For the case of replacement of a service option connection, this field is set to the new service option; for the case of change in the traffic type of the service option connection, this field is set to the current service option.
4. CON_REF – Connection Reference. For the case of replacement of a service option connection, this field is set to the new connection reference; for the case of change in the traffic type of the service option connection, this field is set to the current connection reference.

1 **Table 1.3.3-1. Primitives sent to the Layer 3 Signaling Control by the Resource**
 2 **Control**

| Primitive | Parameters carried by the primitive | | | | Valid Layer 3 states in which each primitive can be received, for the mobile station (MS) and the base station (BS) |
|------------------------------|---|------|---------|------|---|
| | List of Resources | SO | CON_REF | BLOB | |
| SIG- Allocate. Request | "SO_INSTANCE" and { "FCH", "DCCH", or both } | so | NULL | blob | MS - Mobile Station Idle State BS - Paging Channel Processing |
| | "FCH", "DCCH", or both | so | NULL | blob | MS - Mobile Station Idle State BS - Paging Channel Processing |
| | "SO_INSTANCE" | so | NULL | blob | MS - Mobile Station Control on the Traffic Channel State BS - Traffic Channel Processing |
| | { "FCH" or "DCCH" } and/or "CONT_REV_PILOT" | NULL | NULL | blob | MS - Mobile Station Control on the Traffic Channel State BS - Traffic Channel Processing |
| SIG-Release. Request | "SO_INSTANCE" and { "FCH", "DCCH", or both } | NULL | con_ref | blob | BS - Traffic Channel Processing |
| | "SO_INSTANCE" | NULL | con_ref | blob | BS - Paging Channel Processing or Traffic Channel Processing |
| | "FCH" or "DCCH" or both | NULL | NULL | blob | BS - Traffic Channel Processing |
| | { "FCH" or "DCCH" } and/or "CONT_REV_PILOT" | NULL | NULL | blob | BS - Traffic Channel Processing |

3

4

Table 1.3.3-2. Primitives sent to the Resource Control by the Layer 3 Signaling Control

| Primitive | Parameters carried by the primitive | | | | |
|---|---|--|------|---------|------|
| | List of Resources | SSR_ID | SO | CON_REF | BLOB |
| SIG-Allocate. Confirm/ Indication | "SO_INSTANCE" and { "FCH", "DCCH", or both } | Forward traffic channel traffic type | so | con_ref | blob |
| | "FCH", "DCCH", or both | NULL | NULL | NULL | blob |
| | "SO_INSTANCE" | Forward traffic channel traffic type | so | con_ref | blob |
| | { "FCH" } and/or "CONT_REV_PILOT" | NULL | NULL | NULL | blob |
| SIG-Release. Confirm/ Indication | "SO_INSTANCE" and { "FCH", "DCCH", or both } | n/a | NULL | con_ref | blob |
| | "SO_INSTANCE" | n/a | NULL | con_ref | blob |
| | "FCH" or "DCCH" or both | n/a | NULL | NULL | blob |
| | { "FCH" } and/or "CONT_REV_PILOT" | n/a | NULL | NULL | blob |

1 Table 1.3.3-3. Additional primitives exchanged between the Resource Control and the
2 Layer 3 Signaling Control

| Primitive | Parameters | Direction of Exchange | Valid Layer 3 states involved | Comments |
|--|--|---|--|--|
| SIG-Send. Request | PP_BLOB | Resource Control to Layer 3 Signaling Control at the mobile station | MS - " <i>Idle State</i> " or " <i>Control on the Traffic Channel State</i> " | When this primitive is received, Layer 3 signaling at the mobile station is to encapsulate the blob in a <i>Peer-to-Peer Resource Control (Mini) Message</i> and send it over the air to the base station. |
| SIG-Receive. Indication | PP_BLOB | Layer 3 Signaling Control to Resource Control at the base station | BS - " <i>Paging Channel Processing</i> " or " <i>Traffic Channel Processing</i> " | This primitive is sent when the Layer3 signaling at the base station receives the blob in a <i>Peer-to-Peer Resource Control (Mini) Message</i> over the air from the mobile station. |
| RC-Reset. Request | none | Layer 3 Signaling Control to Resource Control, at the mobile station and the base station | Any state | Layer 3 signaling sends this primitive to Resource Control to indicate that the Resource Control is to be reset. |
| SIG-Update ServiceInfo. Indication | SSR_ID, NEW_SSR_ID, SO, CON_REF | Layer 3 Signaling Control to Resource Control, at the mobile station and the base station | MS - " <i>Control on the Traffic Channel State</i> " BS - " <i>Traffic Channel Processing</i> " | This primitive is sent to Resource Control if a service option connection is replaced by another or if the traffic type assigned to a service option connection has changed. |

3

4

1.3.4. Functional Description

In the Data Plane, Layer 3 originates and terminates signaling data units according to the semantic and timing of the communication protocol between the base station and the mobile station. From a semantic point of view the signaling data units are referred to as "messages" (or "orders"). From a protocol point of view, the signaling data units are PDUs. In general, the language of this specification does not explicitly distinguish between semantics and the protocol viewpoints, and the terms "PDU" and "Message". It is considered that the context provides enough information to allow the reader to make the appropriate distinctions.

1.3.5. PDU Transmission and Reception

Layer 3 employs the services offered at the interface with Layer 2 to transfer PDUs to and from the layer 3 entity.

When requesting the transmission of a PDU, Layer 3 will typically specify whether the transfer will be performed in *assured mode* or in *unassured mode* (for example, by setting the proper parameters in the MCSB argument of the L2-Data.Request primitive). For transmission in assured mode, layer 3 may specify if *confirmation of delivery* of the PDU is required.

Layer 2 guarantees that an assured mode PDU received from the transmitting Layer 3 entity is delivered to the receiving Layer 3 entity. Each assured mode PDU is delivered to the receiving Layer 3 entity only once and without errors. Additionally, if the transmitting Layer 3 entity requests confirmation of delivery of an assured mode PDU, Layer 2 will send an indication to the transmitting Layer 3 entity (for example by using the L2-Data.Confirm primitive) when Layer 2 receives an acknowledgment for that PDU. If Layer 2 is not able to deliver an assured mode PDU, it sends an indication of the failure to Layer 3 which can then take corrective action.

Layer 2 does not guarantee that an assured mode PDU received from the transmitting Layer 3 entity is delivered to the receiving Layer 3 entity. Thus, Layer 2 acknowledgments may not be required for unassured mode PDUs. To increase the probability of delivery of unassured mode PDUs, Layer 3 may request Layer 2 to send those PDUs multiple times in quick repeat sequence and rely on the duplicate detection capabilities of the receiver to achieve uniqueness of delivery.

Layer 3 can also request Layer 2 to perform a reset of the Layer 2 ARQ procedures (for example, by using the L2-Supervision.Request primitive).

2. REQUIREMENTS FOR MOBILE STATION CDMA OPERATION

This section defines requirements that are specific to CDMA mobile station equipment and operation. A CDMA mobile station may support operation in one or more band classes.

2.1 Reserved

2.2 Reserved

2.3 Security and Identification

2.3.1 Mobile Station Identification Number

Mobile stations operating in the CDMA mode are identified by the International Mobile Station Identity (IMSI).² Mobile Stations shall have two different identifiers, IMSI_T and IMSI_M. The IMSI consists of up to 15 numerical characters (0-9). The first three digits of the IMSI are the Mobile Country Code (MCC), and the remaining digits are the National Mobile Station Identity (NMSI). The NMSI consists of the Mobile Network Code (MNC) and the Mobile Station Identification Number (MSIN). The IMSI structure is shown in Figure 2.3.1-1.

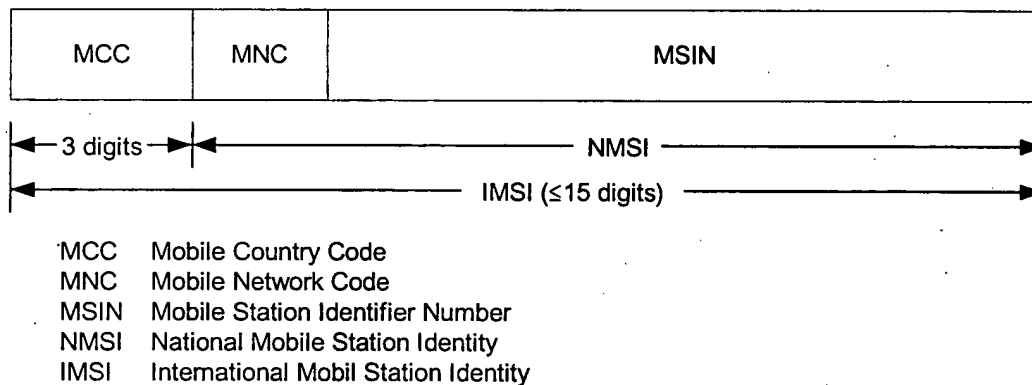


Figure 2.3.1-1. IMSI Structure

An IMSI that is 15 digits in length is called a class 0 IMSI (the NMSI is 12 digits in length); an IMSI that is less than 15 digits in length is called a class 1 IMSI (the NMSI is less than 12 digits in length).

² See CCITT Blue Book, Volume II-Fascicle II.2, Recommendation E.212, November 1988.

IMSI_M is an IMSI that contains a MIN in the lower ten digits of the NMSI. An IMSI_M can be a class 0 or a class 1 IMSI. If the IMSI_M is not programmed, the mobile station shall set the four least-significant digits of the IMSI_M to the value of the ESN_p, converted directly from binary to decimal, modulo 10000, and the mobile station shall set the other digits to 0.

IMSI_T is an IMSI that is not associated with the MIN assigned to the mobile station. An IMSI_T can be a class 0 or class 1 IMSI. If the IMSI_T is not programmed, the mobile station shall set the four least-significant digits of the IMSI_T to the value of the ESN_p, converted directly from binary to decimal, modulo 10000, and the mobile station shall set the other digits to 0.

When operating in the CDMA mode the mobile station shall set its operational IMSI value, IMSI_O, to either the IMSI_M or the IMSI_T depending on the capabilities of the base station (See 2.6.2.2.5).

An IMSI_S is a 10-digit (34-bit) number derived from the IMSI. When an IMSI has ten or more digits, IMSI_S is equal to the last ten digits. When an IMSI has fewer than ten digits, the least significant digits of IMSI_S are equal to the IMSI and zeros are added to the most significant side to obtain a total of ten digits. A 10-digit IMSI_S consists of 3- and 7-digit parts, called IMSI_S2 and IMSI_S1, respectively, as illustrated in Figure 2.3.1-2. IMSI_S is mapped into a 34-bit number (see 2.3.1.1). The IMSI_S derived from IMSI_M is designated IMSI_M_S. The IMSI_S derived from IMSI_T is designated IMSI_T_S. The IMSI_S derived from IMSI_O is designated IMSI_O_S.

The mobile station shall have memory to store the 34-bit IMSI_M_S_p and the 34-bit IMSI_T_S_p. IMSI_M_S_p is represented by the 10-bit IMSI_M_S2_p and the 24 bit IMSI_M_S1_p. IMSI_T_S_p is represented by the 10-bit IMSI_T_S2_p and the 24 bit IMSI_T_S1_p.

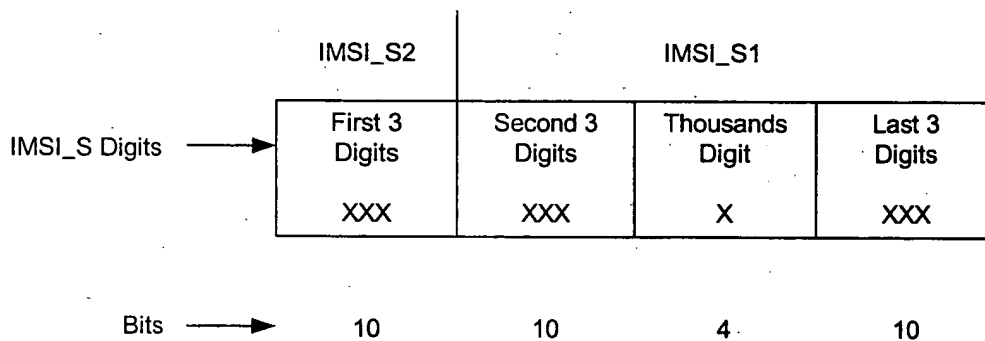


Figure 2.3.1-2. IMSI_S Binary Mapping

When an IMSI has 12 or more digits, IMSI_{11_12} is equal to the 11th and 12th digits of the IMSI. When an IMSI has fewer than 12 digits, digits with a value equal to zero are

1 added to the most significant side to obtain a total of 12 digits and the IMSI_11_12 is equal
2 to the 11th and 12th digits of the resulting number.

3 IMSI_11_12 is encoded as described in 2.3.1.2. The mobile station shall have memory to
4 store the 7-bit IMSI_M_11_12_p and the 7-bit IMSI_T_11_12_p.

5 The 3-digit MCC is encoded as described in 2.3.1.3. The mobile station shall have memory
6 to store the 10-bit MCC_M_p and the 10-bit MCC_T_p.

7 If the mobile station has a class 1 IMSI_T, or IMSI_M, it shall have memory to store
8 IMSI_T_ADDR_NUM_p and IMSI_M_ADDR_NUM_p. IMSI_T_ADDR_NUM_p is equal to the
9 number of digits in the NMSI minus four. IMSI_M_ADDR_NUM_p is equal to the number of
10 digits in the NMSI of the IMSI_M minus four.

11 2.3.1.1 Encoding of IMSI_M_S and IMSI_T_S

12 The IMSI_M_S and IMSI_T_S binary mapping is defined as follows:

- 13 1. The first three digits of the IMSI_M_S and the first three digits of the IMSI_T_S are
14 mapped into ten bits (corresponding to IMSI_M_S2_p and IMSI_T_S2_p, respectively)
15 by the following coding algorithm:
 - 16 a. Represent these three digits as D₁ D₂ D₃ with the digit equal to zero being
17 given the value of ten.
 - 18 b. Compute $100 \times D_1 + 10 \times D_2 + D_3 - 111$.
 - 19 c. Convert the result in step b to binary by the standard decimal-to-binary
20 conversion as shown in Table 2.3.1.1-1.

21
22 **Table 2.3.1.1-1. Decimal to Binary Conversion Table**

| Decimal Number | Binary Number |
|----------------|---------------|
| 0 | 0000000000 |
| 1 | 0000000001 |
| 2 | 0000000010 |
| 3 | 0000000011 |
| 4 | 0000000100 |
| . | . |
| . | . |
| . | . |
| 998 | 1111100110 |
| 999 | 1111100111 |

2. The second three digits of IMSI_M_S and the second three digits of IMSI_T_S are mapped into the ten most significant bits of IMSI_M_S1_p and IMSI_T_S1_p, respectively, by the coding algorithm indicated in 1.
3. The last four digits of IMSI_M_S and the last four digits of IMSI_T_S are mapped into the 14 least significant bits of IMSI_M_S1_p and IMSI_T_S1_p, respectively, as follows:
 - a. The thousands digit is mapped into four bits by a Binary-Coded-Decimal (BCD) conversion, as shown in Table 2.3.1.1-2.
 - b. The last three digits are mapped into ten bits by the coding algorithm indicated in 1.

Table 2.3.1.1-2. BCD Mapping

| Decimal Digit | Binary Number |
|---------------|---------------|
| 1 | 0001 |
| 2 | 0010 |
| 3 | 0011 |
| 4 | 0100 |
| 5 | 0101 |
| 6 | 0110 |
| 7 | 0111 |
| 8 | 1000 |
| 9 | 1001 |
| 0 | 1010 |

The following example illustrates the IMSI_T_S2_p and IMSI_T_S1_p calculation procedure. Let the IMSI_T be the 9-digit number 123456789. Since the IMSI_T has fewer than ten digits, the nine least significant digits of the IMSI_T_S are equal to the IMSI_T digits and the most significant IMSI_T_S digit is set to zero. So the 10-digit IMSI_T_S is 012 345 6789. IMSI_T_S2_p and IMSI_T_S1_p are calculated as follows:

- IMSI_T_S2_p. The ten-bit IMSI_T_S2_p is derived from the first three digits of the IMSI_T_S (i.e., 012):
 - a. D1 = 10; D2 = 1; D3 = 2.
 - b. $100 \times D1 + 10 \times D2 + D3 - 111 = 100 \times 10 + 10 \times 1 + 2 - 111 = 901$.
 - c. 901 in binary is '11 1000 0101'.
 Therefore, IMSI_T_S2_p is '11 1000 0101'.

- 1 • IMSI_T_S1_p. The ten most significant bits of IMSI_T_S1_p are derived from the
- 2 second three digits of the IMSI_T_S (i.e., 345):
- 3 a. $D_1 = 3; D_2 = 4; D_3 = 5$.
- 4 b. $100 \times D_1 + 10 \times D_2 + D_3 - 111 = 100 \times 3 + 10 \times 4 + 5 - 111 = 234$.
- 5 c. 234 in binary is '0011 1010 10'.
- 6 The next four most significant bits of IMSI_T_S1_p are derived from the thousands digit of
- 7 the IMSI_T_S (i.e., 6) by BCD conversion: 6 in BCD is '0110'.
- 8 The ten least significant bits of IMSI_T_S1_p are derived from the last three digits of the
- 9 IMSI_T_S (i.e., 789):
- 10 a. $D_1 = 7; D_2 = 8; D_3 = 9$.
- 11 b. $100 \times D_1 + 10 \times D_2 + D_3 - 111 = 100 \times 7 + 10 \times 8 + 9 - 111 = 678$.
- 12 c. 678 in binary is '10 1010 0110'.
- 13 Therefore, IMSI_T_S1_p is '0011 1010 1001 1010 1010 0110'.

14 2.3.1.2 Encoding of IMSI_M_11_12 and IMSI_T_11_12

15 The IMSI_M_11_12 and IMSI_T_11_12 binary mapping is defined as follows:

- 16 1. Represent the 11th digit as D_{11} and the 12th digit as D_{12} with the digit equal to
- 17 zero being given the value of ten.
- 18 2. Compute $10 \times D_{12} + D_{11} - 11$.
- 19 3. Convert the result in step 2 to binary by a standard decimal-to-binary conversion
- 20 as described in Table 6.3.1.1-1 and limit the resulting number to the 7 least
- 21 significant bits.

22 2.3.1.3 Encoding of the MCC_M and MCC_T

23 The MCC_M and MCC_T binary mapping is defined as follows:

- 24 1. Represent the 3-digit Mobile Country Code as $D_1 D_2 D_3$ with the digit equal to zero
- 25 being given the value of ten.
- 26 2. Compute $100 \times D_1 + 10 \times D_2 + D_3 - 111$.
- 27 3. Convert the result in step (2) to binary by a standard decimal-to-binary conversion
- 28 as described in Table 2.3.1.1-1.

29 2.3.1.4 Mobile Directory Number

30 A Mobile Directory Number (MDN) is a dialable number associated with the mobile station

31 through a service subscription. A Mobile Directory Number is not necessarily the same as

32 the mobile station identification on the air interface, i.e., MIN, IMSI_M or IMSI_T. An MDN

33 consists of up to 15 digits. The mobile station should have memory to store at least one

34 Mobile Directory Number (see Table F.3-1).

2.3.2 Electronic Serial Number

The ESN is a 32-bit binary number that uniquely identifies the mobile station to any wireless system. The ESN value is available to procedures in the mobile station as the value of the variable ESN_p . The value of the variable $RN_HASH_KEY_s$ is the same as the value of the variable ESN_p , and need not be stored separately.

2.3.3 Station Class Mark

Class-of-station information referred to as the station class mark (SCM_p) must be stored in a mobile station. The digital representation of this class mark for Band Class 0 and Band Class 1 is specified in Table 2.3.3-1.

Table 2.3.3-1. Station Class Mark

| Function | Bit(s) | Setting |
|---|--------|-----------------------------|
| Extended SCM Indicator | 7 | Band Class 0 0XXXXXXX |
| | | Band Class 1 1XXXXXXX |
| Dual Mode | 6 | CDMA Only X0XXXXXX |
| | | Dual Mode X1XXXXXX |
| Slotted Class | 5 | Non-Slotted XX0XXXXX |
| | | Slotted XX1XXXXX |
| IS-54 Power Class | 4 | Always 0 XXX0XXXX |
| 25 MHz Bandwidth | 3 | Always 1 XXXX1XXX |
| Transmission | 2 | Continuous XXXXX0XX |
| | | Discontinuous XXXXX1XX |
| Power Class for Band Class 0 Analog Operation | 1 - 0 | Class I XXXXXX00 |
| | | Class II XXXXXX01 |
| | | Class III XXXXXX10 |
| | | Reserved XXXXXX11 |

If the mobile station supports analog mode operation in Band Class 0, the mobile station shall set the Power Class function bits to reflect its analog power class at Band Class 0, regardless of the band class in which it is operating; otherwise, the mobile station shall set these bits to '00'.

2.3.4 Registration Memory

The mobile station shall have memory to store one element in the zone-based registration list $ZONE_LIST_{s-p}$ (see 2.6.5.1.5 and 2.6.5.5). This stored element shall include both REG_ZONE and the corresponding (SID, NID) pair. The data retention time under power-off conditions shall be at least 48 hours. If, after 48 hours, the data integrity cannot be guaranteed, then the entry in $ZONE_LIST_{s-p}$ shall be deleted upon power-on.

1 The mobile station shall have memory to store one element in the system/network
 2 registration list $SID_NID_LIST_{s-p}$ (see 2.6.5.1.5 and 2.6.5.5). The data retention time
 3 under power-off conditions shall be at least 48 hours. If, after 48 hours, the data integrity
 4 cannot be guaranteed, then the entry in $SID_NID_LIST_{s-p}$ shall be deleted upon power-on.

5 The mobile station shall have memory to store the distance-based registration variables
 6 $BASE_LAT_REG_{s-p}$, $BASE_LONG_REG_{s-p}$, and $REG_DIST_REG_{s-p}$ (see 2.6.5.1.4 and
 7 2.6.5.5). The data retention time under power-off conditions shall be at least 48 hours. If,
 8 after 48 hours, the data integrity cannot be guaranteed, then $REG_DIST_REG_{s-p}$ shall be
 9 set to zero upon power-on.

10 2.3.5 Access Overload Class

11 The 4-bit access overload class indicator ($ACCOLC_p$) is used to identify which overload
 12 class controls access attempts by the mobile station and is used to identify redirected
 13 overload classes in global service redirection.

14 The mobile station shall store 4-bit access overload class ($ACCOLC_p$). Mobile stations that
 15 are not for test or emergency use should be assigned to overload classes $ACCOLC$ 0
 16 through $ACCOLC$ 9. For mobile stations that are classified as overload classes $ACCOLC$ 0
 17 through $ACCOLC$ 9, the mobile station's 4-bit access overload class indicator ($ACCOLC_p$)
 18 shall be automatically derived from the last digit of the associated decimal representation
 19 of the $IMSI_M$ by a decimal to binary conversion as specified in Table 2.3.5-1. When a
 20 mobile station's $IMSI_M$ is updated, the mobile station shall re-calculate the $ACCOLC_p$ as
 21 indicated above. Mobile stations designated for test use should be assigned to $ACCOLC$
 22 10; mobile stations designated for emergency use should be assigned to $ACCOLC$ 11.
 23 $ACCOLC$ 12 through $ACCOLC$ 15 are reserved.³ Programming the 4-bit $ACCOLC_p$ for
 24 overload classes $ACCOLC$ 10 through $ACCOLC$ 15 as specified in Table 2.3.5-2 shall
 25 require a special facility only available to equipment manufacturers and system operators.

26 The content of $ACCOLC_p$ shall not be visible through the mobile station's display.

27

³ For more information, refer to TSB16.

Table 2.3.5-1. ACCOLC_p Mapping for ACCOLC 0 through ACCOLC 9

| Last Digit of the Decimal Representation of the IMSI | ACCOLC _p |
|--|---------------------|
| 0 | 0000 |
| 1 | 0001 |
| 2 | 0010 |
| 3 | 0011 |
| 4 | 0100 |
| 5 | 0101 |
| 6 | 0110 |
| 7 | 0111 |
| 8 | 1000 |
| 9 | 1001 |

Table 2.3.5-2. ACCOLC_p Mapping for ACCOLC 10 through ACCOLC 15

| Overload Class | ACCOLC _p |
|----------------|---------------------|
| 10 | 1010 |
| 11 | 1011 |
| 12 | 1100 |
| 13 | 1101 |
| 14 | 1110 |
| 15 | 1111 |

2.3.6 Reserved

2.3.7 Reserved

2.3.8 Home System and Network Identification

In addition to the HOME_SID_p parameter that the mobile station stores for 800 MHz analog operation, the mobile station shall provide memory to store at least one home (SID_p, NID_p) pair. The mobile station shall also provide memory to store the 1-bit parameters MOB_TERM_HOME_p, MOB_TERM_FOR_SID_p, and MOB_TERM_FOR_NID_p (see 2.6.5.3).

2.3.9 Local Control Option

If the mobile station supports the local control option, a means shall be provided within the mobile station to enable or disable the local control option.

2.3.10 Preferred Operation Selection

2.3.10.1 Preferred System

If the mobile station supports operation in Band Class 0 (see 3GPP2 C.S0002-0), a means shall be provided within the mobile station to identify the preferred system. In addition, the mobile station may provide a means for allowing operation only with System A or only with System B.

2.3.10.2 Preferred CDMA or Analog

If the mobile station supports operation in Band Class 0 (see 3GPP2 C.S0002-0), a means may be provided within the mobile station to identify the preferred operation type as either CDMA mode or analog mode. In addition, the mobile station may provide a means for allowing operation only in the preferred mode.

2.3.11 Discontinuous Reception

The mobile station shall provide memory to store the preferred slot cycle index, $\text{SLOT_CYCLE_INDEX}_p$ (see 2.6.2.1.1.3.2).

2.3.12 Authentication, Encryption of Signaling Information/User Data and Voice Privacy

2.3.12.1 Authentication

Authentication is the process by which information is exchanged between a mobile station and base station for the purpose of confirming the identity of the mobile station. A successful outcome of the authentication process occurs only when it can be demonstrated that the mobile station and base station possess identical sets of shared secret data.

The authentication algorithms are described in "Common Cryptographic Algorithms." The interface (input and output parameters) for the algorithms is described in "Interface Specification for Common Cryptographic Algorithms." Table 2.3.12.1-1 summarizes the setting of the input parameters of the Auth_Signature procedure for each of its uses in this standard.

For authentication purposes, the mobile station shall use IMSI_M if it is programmed; otherwise, the mobile station shall use IMSI_T. The base station uses the IMSI selected according to the same criteria.

Table 2.3.12.1-1. Auth_Signature Input Parameters

| Procedure | RAND_CHALLENGE | ESN | AUTH_DATA | SSD_AUTH | SAVE_REGISTERS |
|-------------------------------------|-----------------------------|------------------|-----------|-----------|----------------|
| Unique Challenge (2.3.12.1.4) | RANDU and 8 LSBs of IMSI_S2 | ESN _p | IMSI_S1 | SSD_A | FALSE |
| Base Station Challenge (2.3.12.1.5) | RANDBS | ESN _p | IMSI_S1 | SSD_A_NEW | FALSE |

2.3.12.1.1 Shared Secret Data (SSD)

SSD is a 128-bit quantity that is stored in semi-permanent memory in the mobile station and is readily available to the base station. As depicted in Figure 2.3.12.1.1-1, SSD is partitioned into two distinct subsets. Each subset is used to support a different process.

| | | |
|---------------|-------|-------|
| Contents | SSD_A | SSD_B |
| Length (bits) | 64 | 64 |

Figure 2.3.12.1.1-1. Partitioning of SSD

SSD_A is used to support the authentication procedures and SSD_B is used to support voice privacy (see 2.3.12.3) and message encryption (see 2.3.12.2). SSD is generated according to the procedure specified in 2.3.12.1.5. The SSD shall not be accessible to the user.

2.3.12.1.2 Random Challenge Memory (RAND)

RAND is a 32-bit value held in the mobile station. When operating in CDMA mode, it is equal to the RAND value received in the last *Access Parameters Message* (see 3.7.2.3.2.2) of the CDMA f-csch.

RAND_s is used in conjunction with SSD_A and other parameters, as appropriate, to authenticate mobile station originations, terminations and registrations.

2.3.12.1.3 Call History Parameter (COUNT_{s-p})

COUNT_{s-p} is a modulo-64 count held in the mobile station. COUNT_{s-p} is updated by the mobile station when a *Parameter Update Order* is received on the f-dsch (see 3.7.4).

2.3.12.1.4 Unique Challenge-Response Procedure

The Unique Challenge-Response Procedure is initiated by the base station and can be carried out either on the f-csch and r-csch, or on the f-dsch and r-dsch. The procedure is as follows:

1 The base station generates the 24-bit quantity RANDU and sends it to the mobile station
 2 in the *Authentication Challenge Message* on either the f-csch or f-dsch. Upon receipt of the
 3 *Authentication Challenge Message*, the mobile station shall set the input parameters of the
 4 Auth_Signature procedure (see "Interface Specification for Common Cryptographic
 5 Algorithms," section 2.3) as illustrated in Figure 2.3.12.1.4-1. The 24 most significant bits
 6 of the RAND_CHALLENGE input parameter shall be filled with RANDU, and the 8 least
 7 significant bits of RAND_CHALLENGE shall be filled with the 8 least significant bits of
 8 IMSI_S2.

9 The mobile station shall set the SAVE_REGISTERS input parameter to FALSE.

10 The mobile station shall then execute the Auth_Signature procedure. The 18-bit output
 11 AUTH_SIGNATURE shall be used to fill the AUTHU field of the *Authentication Challenge*
 12 *Response Message*, which shall be sent to the base station.

13 The base station computes the value of AUTHU in the same manner as the mobile station,
 14 but using its internally stored value of SSD_A. The base station compares its computed
 15 value of AUTHU to the value received from the mobile station. If the comparison fails, the
 16 base station may deny further access attempts by the mobile station, drop the call in
 17 progress, or initiate the process of updating SSD (see 2.3.12.1.5).

18 2.3.12.1.5 Updating the Shared Secret Data (SSD)

19 SSD is updated using the SSD_Generation procedure (see "Interface Specification for
 20 Common Cryptographic Algorithms," section 2.2.1), initialized with mobile station specific
 21 information, random data, and the mobile station's A-key. The A-key is 64 bits long. It is
 22 assigned to the mobile station and is stored in the mobile station's permanent security and
 23 identification memory. The A-key is known only to the mobile station and to its associated
 24 Home Location Register/Authentication Center (HLR/AC) (see TIA/EIA-41-D). Non-
 25 manual methods, such as described in TIA/EIA/IS-683-A, are preferred for entry of the A-
 26 key into the mobile station. TSB50 describes a manual method of entry that may be used
 27 when automated methods are not available.

28 The SSD update procedure is performed as follows (see Figure 2.3.12.1.5-1):

29 The base station sends an *SSD Update Message* on either the f-csch or the f-dsch. The
 30 RANDSSD field of the *SSD Update Message* contains the same value used for the HLR/AC
 31 computation of SSD.

32 Upon receipt of the *SSD Update Message* the mobile station shall set the input parameters
 33 of the SSD_Generation procedure (see "Interface Specification for Common Cryptographic
 34 Algorithms," section 2.2.1) as illustrated in Figure 2.3.12.1.5-2. The mobile station shall
 35 then execute the SSD_Generation procedure. The mobile station shall set SSD_A_NEW
 36 and SSD_B_NEW to the outputs of the SSD_Generation procedure.

37 The mobile station shall then select a 32-bit random number, RANDBS, and shall send it
 38 to the base station in a *Base Station Challenge Order* on the r-csch or r-dsch.

39 Both the mobile station and the base station shall then set the input parameters of the
 40 Auth_Signature procedure (see "Interface Specification for Common Cryptographic

1 Algorithms," section 2.3) as illustrated in Figure 2.3.12.1.5-3 and shall execute the
2 Auth_Signature procedure.

3 The mobile station and base station shall set the SAVE_REGISTERS input parameter to
4 FALSE.

5 The mobile station and base station shall execute the Auth_Signature procedure. AUTHBS
6 is set to the 18-bit result AUTH_SIGNATURE. The base station sends its computed value
7 of AUTHBS to the mobile station in a *Base Station Challenge Confirmation Order* on the f-
8 csch or the f-dsch.

9 Upon receipt of the *Base Station Challenge Confirmation Order* the mobile station shall
10 compare the received value of AUTHBS to its internally computed value. (If the mobile
11 station receives a *Base Station Challenge Confirmation Order* when an SSD update is not in
12 progress, the mobile station shall respond with an *SSD Update Rejection Order*.)

13 If the comparison is successful, the mobile station shall execute the SSD_Update
14 procedure (see "Interface Specification for Common Cryptographic Algorithms," section
15 2.2.2) to set SSD_A and SSD_B to SSD_A_NEW and SSD_B_NEW, respectively. The mobile
16 station shall then send an *SSD Update Confirmation Order* to the base station, indicating
17 successful completion of the SSD update.

18 If the comparison is not successful, the mobile station shall discard SSD_A_NEW and
19 SSD_B_NEW. The mobile station shall then send an *SSD Update Rejection Order* to the
20 base station, indicating unsuccessful completion of the SSD update.

21 Upon receipt of the *SSD Update Confirmation Order*, the base station sets SSD_A and
22 SSD_B to the values received from the HLR/AC (see EIA/TIA/IS-41).

23 If the mobile station fails to receive the *Base Station Challenge Confirmation Order* within
24 T_{64m} seconds of when the acknowledgment to the *Base Station Challenge Order* was
25 received, the mobile station shall discard SSD_A_NEW and SSD_B_NEW. The mobile
26 station shall then terminate the SSD update process.

- 1 • If this message is received while first-idle ID status is disabled, location-
2 registration ID status is disabled, first-registration ID status is enabled, first-
3 location-area ID status is enabled, and the mobile station is tuned to a control
4 channel different from $LRCC_S$, then the mobile station shall set first-registration
5 ID status to disabled.
- 6 • The mobile station must set $REGID_S$ to the value of the REGID field of the
7 received message. If the first-registration ID status is enabled, the location-
8 registration ID status is disabled, and $SID_S = SID_{S-p}$, the mobile station must do
9 the following:
 - 10 — set the first-registration ID status to disabled (see 2.6.1.1.2).
 - 11 — if autonomous registration is enabled, the mobile station must enter the
12 Autonomous Registration Update Task (see 2.6.3.11), supplying a “success”
13 indication.
 - 14 — the mobile station shall continue to process information in the overhead
15 message stream.
- 16 Otherwise, the mobile station shall set the first-registration ID status to disabled
17 (see 2.6.1.1.2) and proceed as follows:
 - 18 • If $DIGITAL_REG_{S-p} = '00000001'$, the mobile station must perform the following:
 - 19 — Set $DIGITAL_REG_{S-p} = '00000000'$
 - 20 — If autonomous registration is enabled, the mobile station shall set the first-
21 registration ID status to disabled (see 2.6.1.1.2) and then enter the System
22 Access Task with a “registration” indication (see 2.6.3)
 - 23 • If SID_S equals the SID_{S-p} value stored in the registration memory or if
24 $CDMA_MODE_S = 1$, the mobile station must perform the following:
 - 25 — If $CDMA_MODE_S = 1$, the mobile station must perform the following:
 - 26 + Set $CDMA_MODE_S = 0$.
 - 27 + Generate a random number distributed uniformly in the interval 0 to
28 $8 \times MAX_REDIRECT_DELAY_S$ seconds, and if quantized, with granularity
29 no greater than 1 ms. The mobile station must set its redirect delay
30 timer to this random number and continue to process messages in the
31 overhead message train.
 - 32 — Otherwise, if the redirect delay timer is inactive, the mobile station must
33 perform the following:
 - 34 — The mobile station must use the following (or an equivalent) algorithm to
35 review the $NXTREG_{S-p}$ associated with the SID_{S-p} to determine if $REGID_S$
36 has cycled through zero:
 - 37 + If $UPDATE_NEXTREG_S = 1$, set $NXTREG_{S-p}$ to $REGID_S + REGINCR_S$ and
38 reset $UPDATE_NEXTREG_S$ to 0.

- 1 + If $NXTREG_{S-p}$ is greater than or equal to $REGID_S + REGINCR_S + 5$, then
- 2 $NXTREG_{S-p}$ must be replaced by the greater of 0 or $NXTREG_{S-p} - 2^{20}$.
- 3 + Otherwise do not change $NXTREG_{S-p}$.
- 4 — The mobile station must then compare $REGID_S$ with the $NXTREG_{S-p}$
- 5 associated with the SID_{S-p} .
- 6 + If $REGID_S$ is greater than or equal to $NXTREG_{S-p}$ and autonomous
- 7 registration is enabled, the mobile station must set the first-registration
- 8 ID status to disabled (see 2.6.1.1.2) and then enter the System Access
- 9 Task with a "registration" indication (see 2.6.3).
- 10 + If $REGID_S$ is greater than or equal to $NXTREG_{S-p}$ and autonomous
- 11 registration is not enabled, then set $NXTREG_{S-p}$ equal to $REGID_S$.
- 12 + Otherwise, the mobile station must ignore the message and continue to
- 13 process messages in the overhead message train.
- 14 • If SID_S is not equal to the SID_{S-p} value stored in the registration memory, the
- 15 mobile station must perform the following:
 - 16 — If autonomous registration is enabled, the mobile station shall set the first-
 - 17 registration ID status to disabled (see 2.6.1.1.2). The mobile station shall
 - 18 then enter the System Access Task with a "registration" indication supplied
 - 19 (see 2.6.3).
 - 20 — Otherwise, the mobile station must ignore the message and continue to
 - 21 process messages in the overhead message train.
- 22 9. *CDMA Capability Message*: The mobile station must perform the following:
 - 23 • If $PACA_S = 1$, the mobile station should ignore the *CDMA Capability Message*
 - 24 and continue to process messages in the overhead message train.
 - 25 • If $CDMA_AVAIL$ equals '1', $REDIRECTION_S$ equals disabled, and the preferred
 - 26 mode of operation is CDMA, the mobile station may exit this task and enter the
 - 27 *System Determination Substate* of the *Mobile Station Initialization State* with a
 - 28 CDMA available indication (see 6.6.1.1).
 - 29 • If $CDMA_AVAIL$ equals '1', $REDIRECTION_S$ equals enabled, the $IGNORE_CDMA$
 - 30 field of $REDIRECT_REC_S$ equals '0', and the preferred mode of operation is
 - 31 CDMA, the mobile station may exit this task and enter the *System Determination*
 - 32 *Substate* of the *Mobile Station Initialization State* with a CDMA available
 - 33 indication (see 6.6.1.1).
 - 34 • If ADD_CDMA_AVAIL equals '1', $REDIRECTION_S$ equals disabled, and the
 - 35 preferred mode of operation is CDMA, the mobile station may exit this task and
 - 36 enter the *System Access Task* with a CDMA query indication (see 2.6.3).
 - 37 • If ADD_CDMA_AVAIL equals '1', $REDIRECTION_S$ equals enabled, the
 - 38 $IGNORE_CDMA$ field of $REDIRECT_REC_S$ equals '0', and the preferred mode of
 - 39 operation is CDMA, the mobile station may exit this task and enter the *System*
 - 40 *Access Task* with a CDMA query indication (see 2.6.3).

- 1 • If the mobile station has previously attempted and failed to acquire a CDMA
2 system five consecutive times as a result of receiving a *CDMA Capability*
3 *Message*, the mobile station shall ignore the *CDMA Capability Message* until
4 immediately before the next autonomous registration attempt or until the next
5 mobile station power-up.
- 6 • If REDIRECTION_S equals enabled, and the IGNORE_CDMA field of
7 REDIRECT_REC_S equals '1', the mobile station shall ignore the *CDMA Capability*
8 *Message*.
- 9 10. *Rescan Message*: See the corresponding section of TIA/EIA-553-A.
- 10 11. *Any Other Message*: Ignore message.

11 2.6.2.2 Page Match

12 The mobile station must monitor mobile station control messages for page messages (see
13 3.7.1.1).

- 14 • If the ROAM status is disabled, the mobile station must attempt to match MIN1_P to
15 MIN1_r for one-word messages and both MIN1_P and MIN2_P to MIN1_r and MIN2_r,
16 respectively, for two-word messages. All decoded MIN bits must match to cause the
17 mobile station to respond to the message.
- 18 • If the ROAM Status is enabled, the mobile station must attempt to match both
19 MIN1_P and MIN2_P to MIN1_r and MIN2_r, respectively. All decoded MIN bits must
20 match to cause the mobile station to respond to the order.

21 When a match occurs,

- 22 • If PACA_S = 1, the mobile station must set PACA_S = 0 and must indicate to the user
23 that the PACA call has been canceled.
- 24 • The mobile station must enter the System Access Task with a "page response"
25 indication (see 2.6.3).

26 2.6.2.3 Order

27 In addition to the requirements described in the corresponding section of TIA/EIA-553-A,
28 the mobile station must respond as shown to the following orders:

- 29 • *PACA message*: If PACA_S = 0, the mobile station must ignore the message.
30 If PACA_S = 1, the mobile station must perform the following:
 - 31 — If the message is a response to an Origination order (PURPOSE_r = '0000'), the
32 mobile station must ignore the message.
 - 33 — If the message is to provide the queue position of the PACA call (PURPOSE_r =
34 '0001'), the mobile station must indicate to the user that the PACA call is still
35 queued, and must indicate the current queue position (Q_POS_r) of the call. The
36 mobile station shall remain in the current task.

- 1 — If the message is to instruct the mobile station to re-originate the PACA call
2 (PURPOSE_r = '0010'), the mobile station must enter the System Access Task (see
3 2.6.3) with a "PACA response" indication and re-originate the PACA call.
- 4 — If the message is to cancel the PACA call (PURPOSE_r = '0011'), the mobile
5 station must set PACA_s = 0, indicate to the user that the PACA call has been
6 canceled, and enter the Serving System Determination Task (see 2.6.3.12).

7 2.6.2.4 Call Initiation

8 When the user initiates a call, the mobile station must perform the following:

- 9 • If PACA_s = 1, the mobile station must set PACA_s = 0 and must indicate to the user
10 that the PACA call has been canceled.
- 11 • The System Access Task (see 2.6.3) must be entered with an "origination"
12 indication.

13 2.6.2.5 Reserved

14 See the corresponding section of TIA/EIA-553-A.

15 2.6.2.6 Power Down

16 See the corresponding section of TIA/EIA-553-A.

17 2.6.2.7 PACA Cancellation

18 The mobile station PACA Cancel Operation is performed when the user directs the mobile
19 station to cancel the PACA call.

20 If PACA_s = 1, the mobile station must perform the following:

- 21 • Set PACA_s = 0,
- 22 • Indicate to the user that the PACA call has been canceled,
- 23 • Enter the System Access Task (see 2.6.3) with a "PACA cancel" indication.

24 2.6.3 System Access

25 2.6.3.1 Set Access Parameters

26 If a mobile station power down occurs during a system access and PDREG_s = 1 the mobile
27 station must terminate its access procedures and initiate an autonomous registration by
28 entering the System Access Task (see 2.6.3) with a "power down registration" indication.

29 When the System Access Task is started, a timer, called the access timer, must be set as
30 follows:

- 31 • If this is an origination or PACA response, to a maximum of 12 seconds.
- 32 • If this is a page response or PACA cancel, to a maximum of 6 seconds.
- 33 • If this is an order response, to a maximum of 6 seconds.

- 1 • If this is a registration other than power down registration, to a maximum of 6
- 2 seconds.
- 3 • If this is a power down registration, to a maximum of 3 seconds.
- 4 • If this is a Base Station Challenge, to a maximum of 12 seconds.
- 5 • If this is a CDMA query, to a maximum of 6 seconds.

6 The mobile station must set $IDHO_S = 0$ and the last-try code (LT_S) to '0', set
 7 $UPDATE_NEXTREG_S$ to '0', and then enter the Scan Access Channels Task (see 2.6.3.2).

8 2.6.3.2 Scan Access Channels

9 See the corresponding section of TIA/EIA-553-A.

10 2.6.3.3 Retrieve Access Attempt Parameters

11 The mobile station must set the maximum-number-of-seizure-attempts allowed
 12 ($MAXSZTR_S$) to a maximum of 10, and the maximum-number-of-busy-occurrences
 13 ($MAXBUSY_S$) to a maximum of 10.

14 The mobile station must then initialize the following to zero:

- 15 • Number of busy occurrences ($NBUSY_{SV}$)
- 16 • Number of unsuccessful seizure attempts ($NSZTR_{SV}$)

17 The mobile station must then examine the read control-filler bit (RCF_S).

- 18 • If $RCF_S = 0$, the mobile station must then within 400 ms (+100 ms, -0 ms) set DCC_S
 19 to the value in the DCC field of a received message, set $SDCC1_S$ and $SDCC2_S$ to 0,
 20 and set the power level (PL_S) to 0.
- 21 • If $RCF_S = 1$, the mobile station must then within 1000 ms (+100 ms, -0 ms) read a
 22 Control-Filler Message, set DCC_S , $WFOM_S$, $SDCC1_S$ and $SDCC2_S$ to the values in
 23 the DCC, WFOM, SDCC1 and SDCC2 fields of the message, respectively, and set PL_S
 24 to the power level given by Table 2.1.2.2-1 for the value of the CMAC field of the
 25 message and the mobile station power class (see 2.1.2.2, 2.3.3, and 3.7.1.2.4).

26 If the DCC field or the Control-Filler Message is not received within the time allowed, then
 27 the mobile station must examine the access timer. If the access timer has expired, the
 28 mobile station must enter the Serving-System Determination Task (see 2.6.3.12). If the
 29 access timer has not expired, the mobile station must enter the Alternate Access Channel
 30 Task (see 2.6.3.13).

31 The mobile station must then set BIS_S to '1' and examine the $WFOM_S$ bit.

- 32 • If $PACA_S = 1$ or $WFOM_S = 1$, the mobile station must enter the Update Overhead
 33 Information Task (see 2.6.3.4).

- If $WFOM_S = 0$, the mobile station must wait a random delay. Each time it waits a random delay, a random delay must be generated with the time uniformly distributed in the interval 0 to 92 ± 1 ms and, if quantized, with granularity no more than 1 ms. The mobile station must then enter the Seize Reverse Control Channel Task (see 2.6.3.5).

2.6.3.4 Update Overhead Information

If this task is not completed within 1.5 seconds, the mobile station must exit this task and enter the Serving-System Determination Task (see 2.6.3.12). If the Update Overhead Information Task is completed, the mobile station must enter the Seize Reverse Control Channel Task (see 2.6.3.5).

The mobile station must receive an overhead message train (see 3.7.1.2).

- Authentication bit ($AUTH_S$): Set $AUTH_S$ to the value in the AUTH field.
- Extended Protocol bit (EP_S): If the mobile station is capable of supporting Extended Protocol, set EP_S to the value in the EP field.

If the access is a registration, an origination, a PACA response, or a page response, the mobile station shall perform the following:

- Update System Identification (SID_R). Set the 14 most significant bits of SID_R to the value of the $SID1$ field. Set the least significant bit of SID_R to '1' if the serving-system status is enabled; otherwise, set the bit to '0'.
- If the access is a registration, the mobile station must compare SID_R with SID_S . If SID_R is not equal to SID_S , the mobile station must exit the Update Overhead Information Task and enter the Serving System Determination Task (see 2.6.3.12). Otherwise, the mobile station shall continue to process this task.
- If this access is an origination or a page response, the mobile station must compare SID_R with SID_{S-p} . If SID_R does not equal SID_{S-p} , the mobile station must set $RAND_S$ equal to zero.
- If the access is a PACA response and SID_R is not equal to SID_S and $PACA_S = 1$, the mobile station must set $PACA_S = 0$ and must indicate to the user that the PACA call has been canceled. The mobile station must enter the Serving System Determination Task (see 2.6.3.12).

The mobile station must act as indicated below in response to the following global action messages, if received in the message train:

- *Overload Control Message:*
 - If this access is an origination, the mobile station must examine the value of the overload class field (OLC) identified by $ACCOLC_p$. If the identified OLC field is set to '0', the mobile station must exit this task and enter the Serving-System Determination Task (see 2.6.3.12); if the identified OLC field is set to '1', the mobile station must continue to respond to messages in the overhead message train.

- 1 — Otherwise, the mobile station must continue to respond to messages in the
- 2 overhead message train.
- 3 • *Access Type Parameters Message:*
- 4 — The mobile station must set the busy-idle status bit (BIS_S) to the value of the
- 5 BIS field of the received message.
- 6 — The mobile station must set PCI_HOME_S to the value of the PCI_HOME field of
- 7 the received message.
- 8 — The mobile station must set PCI_ROAM_S to the value of the PCI_ROAM field of
- 9 the received message.
- 10 — The mobile station must set BSPC_S to the value of the BSPC field of the received
- 11 message.
- 12 — The mobile station must set BSCAP_S to the value of the BSCAP field of the
- 13 received message.
- 14 + If BSCAP_S indicates that the system supports TIA/EIA-553-A or later
- 15 revisions of the core analog air interface standard.
- 16 + If PCSID ≠ SID_S
- 17 + If Roam status is enabled and PCI_ROAM_S = 1 or
- 18 + If Roam status is disabled and PCI_HOME_S = 1
- 19 + Then, the mobile station shall Update Protocol Capability ID status to
- 20 enabled and set PCSID_S = SID_S.
- 21 • *Random Challenge A Message:* The mobile station must set the corresponding
- 22 portion of its internal RAND1_S to the value of the RAND1_A field in the Global Action
- 23 Message (see 2.3.12.1.2 for updating of RAND).
- 24 • *Random Challenge B Message:* The mobile station must set the corresponding
- 25 portion of its internal RAND1_S to the value of the RAND1_B field in the Global
- 26 Action Message (see 2.3.12.1.2 for updating of RAND).
- 27 • *Access Attempt Parameters Message:* The mobile station must update the following
- 28 parameters:
- 29 — If this access is a page response,
- 30 + Maximum number of seizure tries allowed (MAXSZTR_S) must be set to the
- 31 value of the MAXSZTR-PGR field of the received message.
- 32 + Maximum number of busy occurrences allowed (MAXBUSY_S) must be set to
- 33 the value of the MAXBUSY-PGR field of the received message.
- 34 — Otherwise,
- 35 + Maximum number of seizure tries allowed (MAXSZTR_S) must be set to the
- 36 value of the MAXSZTR-OTHER field of the received message.

- + Maximum number of busy occurrences allowed ($MAXBUSY_S$) must be set to the value of the $MAXBUSY-OTHER$ field of the received message.

If the access is a registration access, the mobile station must respond as indicated to the registration identification message, if received in the overhead message train:

- The mobile station must set $REGID_S$ to the value of the $REGID$ field in the message.

After the overhead message train is received and processed as required above, the mobile station must wait a random time. Each time this task is executed, a different random delay must be generated, distributed uniformly in the interval 0 to 750 ms, and if quantized, with granularity no greater than 1 ms. At the end of the delay, the mobile station must enter the Seize Reverse Control Channel Task (see 2.6.3.5).

2.6.3.5 Seize Reverse Control Channel

See the corresponding section of TIA/EIA-553-A.

2.6.3.6 Delay After Failure

See the corresponding section of TIA/EIA-553-A.

2.6.3.7 Service Request

The mobile station must continue to send its message to the base station. The information that must be sent is as follows (with the formats given in 2.7.1):

- Word A must always be sent.
 - If:
 - $E_S = 1$, or
 - $LT_S = 1$, or
 - $AUTH_S = 1$, or
 - the ROAM status is enabled, or
 - the ROAM status is disabled and $EX_p = 1$, or
 - the access is an "order confirmation," or
 - the access is a "registration," or
 - the access is a "capability registration," or
 - the access is a "CDMA query," or
 - the access is a "base station challenge," or
 - the mobile station was paged with a two-word Mobile Station Control Message, or
 - $RCF = 1$,
- Word B must be sent.

- Word C must be sent as per the following table:

| S_s Bit | Type of System Access | | | |
|--------------|---|---|---|--|
| | Registration, Origination, PACA Cancel, PACA Response, or Page Response where $AUTH_s = 0$ | Registration, Origination, PACA Cancel, PACA Response, or Page Response where $AUTH_s = 1$ | Unique Challenge Order Confirmation | Base Station Challenge |
| 0 | Send no Word C | Send Authentication Word C | Send Unique Challenge Order Confirmation Word C | Send Base Station Challenge Word C |
| 1 | Send Serial Number Word C | Send Serial Number Word C and Authentication Word C | Send Serial Number Word C and Unique Challenge Order Confirmation Word C | Send Serial Number Word C and Base Station Challenge Word C |

- If the access is a "capability registration" and update-protocol-capability ID status is enabled, Protocol Capability Registration Word C must be sent and update-protocol-capability ID status must be disabled.
- If the access is a "registration" and Update Protocol Capability ID status is enabled, Protocol Capability Registration Word C must be sent and Update Protocol Capability ID status must be disabled.
- If the access is an "origination" or "PACA response", word D must be sent.
- If the access is an "origination" or a "PACA response" and 9 to 16 digits were dialed, word E must be sent.
- If the access is an "origination" or a "PACA response" and 17 to 32 digits were dialed, word F and G will be required.

When the mobile station has sent its complete message, it must continue to send unmodulated carrier for a nominal duration of 25 ms and then turn off the transmitter.

The next task to be entered depends on the type of access by the mobile station:

- If the access is an order confirmation or a PACA cancel, the mobile station must enter the Serving-System Determination Task (see 2.6.3.12).
- If the access is an origination, the mobile station must enter the Await Message Task (see 2.6.3.8).
- If the access is a page response, the mobile station must enter the Await Message Task (see 2.6.3.8).
- If the access is a registration request other than a power down registration the mobile station must enter the Await Registration Confirmation Task (see 2.6.3.9). If the registration is a power down registration the mobile station shall power down.

- If the access is a base station challenge, the mobile station must enter the Await Message Task (see 2.6.3.8).
- If the access is a PACA response or a PCI order confirmation, the mobile station must enter the Await Message Task (see 2.6.3.8).
- If the access is a CDMA query, the mobile station must enter the Await Message Task (see 2.6.3.8).

2.6.3.8 Await Message

If this task is not completed within 10 seconds for a Base Station Challenge or within 5 seconds for all other messages and orders, the mobile station must exit this task and enter the Serving System Determination Task (see 2.6.3.12).

The mobile station must monitor mobile station control messages (see 3.7.1.1). If the mobile station sent Word B as part of the Service Request (see 2.6.3.7), then the mobile station must attempt to match $MIN1_p$ and $MIN2_p$ to $MIN1_r$ and $MIN2_r$, respectively; otherwise, the mobile station must attempt to match only $MIN1_p$ to $MIN1_r$.

The mobile station must respond as indicated to any of the following messages if all decoded MIN bits match.

If the access is an origination, PACA response, or page response:

- *Initial Voice Channel Designation Message* (see 3.7.1.1): The mobile station must update the parameters as set in the message, delete all entries from $SID_NID_LIST_s$, $ZONE_LIST_s$, $SID_NID_LIST_{s-p}$, and $ZONE_LIST_{s-p}$, and set $REGISTERED_s$ to NO. If $R_s = 1$ the mobile station must enter the Autonomous Registration Update Task (see 2.6.3.11), supplying a "success" indication. Then enter the Confirm Initial Voice Channel Task (see 2.6.4.2). If $PACA_s = 1$, the mobile station must set $PACA_s = 0$ and must indicate to the user that the PACA call is in process.
- *PACA Message* (see 3.7.1.1): If $PACA_s = 0$, the mobile station must perform the following:
 - If the message is in response to an origination ($PURPOSE_r = '0000'$), the mobile station must set $PACA_s$ to enabled and indicate to the user that the call has been queued as a PACA call. Also, the mobile station must indicate to the user the current queue position (Q_POS_r) of the PACA call, then enter the Idle Task (see 2.6.2).
 - If the message is not in response to an origination, the mobile station must ignore the message.
- If $PACA_s = 1$, the mobile station must perform the following:
 - If the message is in response to an origination ($PURPOSE_r = '0000'$), the mobile station must ignore the message.
 - If the message is to provide the queue position of the PACA call ($PURPOSE_r = '0001'$), the mobile station must indicate to the user that the PACA call is still queued, indicate the current queue position (Q_POS_r) of the call, and remain in the current task.

- If the message is to instruct the mobile station to re-originate the PACA call ($PURPOSE_r = '0010'$), the mobile station must enter the System Access Task (see 2.6.3) with an "PACA response" indication and re-originate the PACA call.
- If the message is to cancel the PACA call ($PURPOSE_r = '0011'$), the mobile station must set $PACA_s = 0$, indicate to the user that the PACA call has been canceled, and enter the Serving-System Determination Task (see 2.6.3.12).

- *Directed-Retry Message* (see 3.7.1.1): If the mobile station is equipped for directed retry, it must respond to the Directed-Retry Message as follows:

If the mobile station encounters the start of a new message before it receives all four words of the Directed-Retry Message, it must exit this task and enter the Serving-System Determination Task (see 2.6.3.12).

The mobile station must set the last-try code (LT_s) according to the ORDQ field of the message:

- If $ORDQ = '000'$, set LT_s to '0'.
- If $ORDQ = '001'$, set LT_s to '1'.

The mobile station must then clear $CCLIST_s$ and examine each CHANPOS field in Words 3 and 4 of the message. For each nonzero CHANPOS field, the mobile station must calculate a corresponding channel number according to the following algorithm:

- If $LOCAL/MSG_TYPE = '00000'$ and the serving-system status is enabled, subtract CHANPOS from $FIRSTCHA_s + 1$.
- If $LOCAL/MSG_TYPE = '00000'$ and the serving-system status is disabled, add CHANPOS to $FIRSTCHA_s - 1$.
- If $LOCAL/MSG_TYPE = '00001'$ and the serving-system status is enabled, set $FIRSTCHA_s$ to the first dedicated control channel for System A (834.990 MHz/879.990 MHz) and subtract CHANPOS from $FIRSTCHA_s + 1$. The mobile must also set $AUTH_s$ to '0'.
- If $LOCAL/MSG_TYPE = '00001'$ and the serving-system status is disabled, set $FIRSTCHA_s$ to the first dedicated control channel for System B (835.020 MHz/880.020 MHz) and add CHANPOS to $FIRSTCHA_s - 1$. The mobile must also set $AUTH_s$ to '0'.
- If $LOCAL/MSG_TYPE = '00010'$ and the serving-system status is enabled, set $FIRSTCHA_s$ to the first dedicated control channel for System A (834.990 MHz/879.990 MHz) and subtract CHANPOS from $FIRSTCHA_s + 1$. The mobile must also set $AUTH_s$ to '1'.
- If $LOCAL/MSG_TYPE = '00010'$ and the serving-system status is disabled, set $FIRSTCHA_s$ to the first dedicated control channel for System B (835.020 MHz/880.020 MHz) and add CHANPOS to $FIRSTCHA_s - 1$. The mobile must also set $AUTH_s$ to '1'.

The mobile station must then determine whether each channel number is within the set allocated to cellular systems, and if so, list the channel number in $CCLIST_S$.

After completing its response to the Directed-Retry Message, the mobile station must examine the access timer. If the access timer has expired, the mobile station must enter the Serving-System Determination Task (see 2.6.3.12). If the access timer has not expired, the mobile station must enter the Directed-Retry Task (see 2.6.3.14).

If the access is an origination or PACA response:

- *Intercept*: If $PACA_S = 1$, the mobile station must set $PACA_S = 0$, must indicate to the user that the PACA call has been canceled, and enter the Serving-System Determination Task (see 2.6.3.12). Otherwise, the mobile station must enter the Serving-System Determination Task (see 2.6.3.12).
- *Reorder*: If $PACA_S = 1$, the mobile station must set $PACA_S = 0$, must indicate to the user that the PACA call has been canceled, and enter the Serving-System Determination Task (see 2.6.3.12). Otherwise, the mobile station must enter the Serving-System Determination Task (see 2.6.3.12).

If the access is a page response:

- *Release*: The mobile station must enter the Serving-System Determination Task (see 2.6.3.12).

If the access is a PCI order confirmation:

- *Release*: The mobile station must enter the Serving-System Determination Task (see 2.6.3.12).
- *Message Waiting Order*: If the mobile station is capable of performing Message Waiting Notification, the mobile station shall indicate the presence of messages waiting based on the information contained in the message type field of the Message Waiting order (i.e., 0 for clear or no messages, other non-zero values indicate the number of messages waiting). The mobile station then enters the System Access Task (see 2.6.3) with an "order confirmation" indication.

If the access is a CDMA Query:

- *CDMA Info Order*: The mobile station should exit this task and enter the *System Determination Substate* of the *Mobile Station Initialization State* with an additional CDMA available indication (see 6.6.1.1).

If the access is a Base Station Challenge:

- *Base Station Challenge Order Confirmation*: The mobile station compares the AUTHBS received in the Base Station Challenge Order Confirmation message to that computed internally. The mobile station must then acknowledge receipt of the SSD Update Order by the SSD Update Order Confirmation message with a success or failure indication as described in 2.3.12.1.8 by entering the System Access Task (see 2.6.3) with an "order response" indication (see 2.6.3.1). If the mobile station fails to receive the Base Station Challenge Order Confirmation within 10 seconds of when

1 the Base Station Challenge Order was transmitted, terminate the SSD update
2 process.

3 If the access is an origination and the user terminates a call during this task, the
4 termination status must be enabled so that the call can be released on a voice channel (see
5 2.6.4.4) instead of on a control channel.

6 2.6.3.9 Await Registration Confirmation

7 In addition to the requirements in this section, see the corresponding section of
8 TIA/EIA-553-A.

9 If the mobile station receives an *Order Confirmation* (see 3.7.1.1) message, it shall delete all
10 entries from $SID_NID_LIST_S$, $ZONE_LIST_S$, $SID_NID_LIST_{S-p}$, and $ZONE_LIST_{S-p}$, and set
11 $REGISTERED_S$ to NO as the first action it takes.

12 2.6.3.10 Action on Registration Failure

13 In addition to the requirements in this section, see the corresponding section of
14 TIA/EIA-553-A.

15 The mobile station shall delete all entries from $SID_NID_LIST_S$, $ZONE_LIST_S$,
16 $SID_NID_LIST_{S-p}$, and $ZONE_LIST_{S-p}$, and set $REGISTERED_S$ to NO as the first action it
17 takes.

18 2.6.3.11 Autonomous Registration Update

19 In addition to the requirements in this section, see the corresponding section of
20 TIA/EIA-553-A.

21 The mobile station shall set $CDMA_MODE_S = 0$ and $DIGITAL_REG_{S-p} = '00000000'$ as the
22 first action it takes.

23 If a "success" indication was supplied to this task and $CPA_S = 1$, the mobile station must
24 set $LRCC_S$ equal to the current control channel.

25 2.6.3.12 Serving-System Determination

26 If this task is entered as a result of a power down registration attempt the mobile station
27 must immediately power down. Otherwise, the mobile station shall proceed as follows:

- 28 • If $REDIRECTION_S$ equals disabled, and either the preferred mode of operation is
29 CDMA or the serving-system status does not correspond to the preferred system,
30 the mobile station may enter the *System Determination Substate* of the *Mobile*
31 *Station Initialization State* with a reselection indication (see 6.6.1.1); otherwise, it
32 must enter the Paging Channel Selection Task (see 2.6.1.2).

33 2.6.3.13 Alternate Access Channel

34 See the corresponding section of TIA/EIA-553-A.

35 2.6.3.14 Directed Retry

36 See the corresponding section of TIA/EIA-553-A.

2.6.4 Mobile Station Control on the Analog Voice Channel

In addition to the requirements in this section, see the corresponding section of TIA/EIA-553-A.

2.6.4.1 Loss of Radio-Link Continuity

See the corresponding section of TIA/EIA-553-A.

2.6.4.2 Confirm Initial Voice Channel

In addition to the requirements in this section, see the corresponding section of TIA/EIA-553-A.

Within 100 ms of the receipt of a *Channel Assignment Message* (see 7.7.2.3.2.8) containing ASSIGN_MODE = '011' and AN_CHAN_TYPE = '00', or an *Extended Channel Assignment Message* (see 7.7.2.3.2.21) containing ASSIGN_MODE = '011' and AN_CHAN_TYPE = '00', the mobile station must execute the procedures in the corresponding section of TIA/EIA-553-A.

2.6.4.3 Alerting

In addition to the requirements in this section, see the corresponding section of TIA/EIA-553-A.

2.6.4.3.1 Waiting for Order

In addition to the requirements in this section, see the corresponding section of TIA/EIA-553-A.

When this task is entered, in addition to the actions described in the corresponding section of TIA/EIA-553-A, the following may occur:

- If this task is entered as a result of receiving an *Analog Handoff Direction Message* (see 6.6.6.2.9), the mobile station must use the VMAC, ANALOG_CHAN, and SCC values obtained from the *Analog Handoff Direction Message* to perform the following operations: adjust power level, tune to new channel, adjust to new SAT, and set SCC_s to the value of the SCC field of the message (see 2.4.1). The mobile station must then turn on the transmitter, and reset the fade timer. The mobile station must set the message encryption mode to that indicated by the MEM value obtained from the *Analog Handoff Direction Message*. The mobile station may compare the SID value obtained from the *Analog Handoff Direction Message* with HOME_SID_p. If SID_r = HOME_SID_p, the mobile station may set the ROAM status to disabled. If SID_r is not equal to HOME_SID_p, the mobile station may set the ROAM status to enabled. The mobile station must remain in the Waiting for Order Task.
- Within 100 ms of the receipt of any of the orders listed either below (see 3.7.2) or in the corresponding section of TIA/EIA-553-A, the mobile station must compare SCC_s to the present SAT color code (PSCC) field in the received message. If SCC_s is not equal to PSCC, the order must be ignored. If SCC_s = PSCC, the action to be taken for each order is as follows:

- 1 — *Alert With Info SMS*: Within 750 ms the mobile station must send an Alert With
2 Info SMS Order Confirmation message. Remain in the Waiting for Order Task.
3 If the value of the TASK_TM field of the received message is '0', reset the order
4 timer to 10 seconds; otherwise reset the order timer to 600 ms.

5 Process the Alert With Info SMS message as follows:

- 6 + If the value of the B/F field of the received message is '11', the INFO_DATA
7 field of the received message contains an unsegmented SMS teleservice
8 message. The mobile station may discard any incomplete SMS teleservice
9 message being reassembled, and should pass the INFO_DATA field of the
10 received message to the SMS teleservice. Set the B/F field of the Alert With
11 Info SMS Order Confirmation Message to '1'. If the teleservice reports an
12 error, set the ERROR_CLASS and CAUSE_CODE fields of the Alert With Info
13 SMS Order Confirmation Message to report the teleservice error.
- 14 + If the value of the B/F field of the received message is '10', the mobile station
15 may discard any incomplete SMS teleservice message being reassembled,
16 and must store the INFO_DATA field of the received message as the first
17 segment of an SMS teleservice message being reassembled. Store the value
18 of the SEQ_NO field of the received message in SEQ_NO_s. Set the B/F field
19 of the Alert With Info SMS Order Confirmation Message to '0'.
- 20 + If the value of the B/F field of the received message is '00' and a segmented
21 SMS teleservice message is being reassembled, compare the value of the
22 SEQ_NO field of the received message to SEQ_NO_s. Set the B/F field of the
23 Alert With Info SMS Order Confirmation Message to '0'. Take action as
24 follows:
- 25 o If $(SEQ_NO_s + 1)$ modulo 8 is equal to the value of the SEQ_NO field of
26 the received message, store the INFO_DATA field of the received message
27 as the next segment of the SMS teleservice message being reassembled,
28 and increment SEQ_NO_s, modulo 8.
- 29 o If SEQ_NO_s is equal to the value of the SEQ_NO field of the received
30 message, the mobile station may discard the INFO_DATA field of the
31 received message.
- 32 o If neither SEQ_NO_s nor $(SEQ_NO_s + 1)$ modulo 8 is equal to the value of
33 the SEQ_NO field of the received message, the mobile station may
34 discard the INFO_DATA field of the received message and may discard
35 the incomplete SMS teleservice message being reassembled.
- 36 + If the value of the B/F field of the received message is '00', and no segmented
37 SMS teleservice message is being reassembled, the mobile station may
38 discard the INFO_DATA field of the received message. Set the B/F field of
39 the Alert With Info SMS Order Confirmation Message to '0'.

- + If the value of the B/F field of the received message is '01' and a segmented SMS teleservice message is being reassembled, store the INFO_DATA field of the received message as the last segment of the SMS teleservice message and pass the complete SMS teleservice message to the SMS teleservice. Set the B/F field of the Alert With Info SMS Order Confirmation Message to '1'. If the teleservice reports an error, set the ERROR_CLASS and CAUSE_CODE fields of the Alert With Info SMS Order Confirmation Message to report the teleservice error.
- + If the value of the B/F field of the received message is '01', and no segmented SMS teleservice message is being reassembled, the mobile station may discard the INFO_DATA field of the received message. Set the ERROR_CLASS and CAUSE_CODE fields of the Alert With Info SMS Order Confirmation Message to report an error due to reception of an incomplete message. Set the B/F field of the Alert With Info SMS Order Confirmation Message to '0'.

2.6.4.3.2 Waiting for Answer

In addition to the requirements in this section, see the corresponding section of TIA/EIA-553-A.

When this task is entered, in addition to the actions described in the corresponding section of TIA/EIA-553-A, the following may occur:

- If this task is entered as a result of receiving an *Analog Handoff Direction Message* (see 6.6.6.2.9), the mobile station must use the VMAC, ANALOG_CHAN, and SCC values obtained from the *Analog Handoff Direction Message* to perform the following operations: adjust power level, tune to new channel, adjust to new SAT, and set SCC_s to the value of the SCC field of the message (see 2.4.1). The mobile station must then turn on the transmitter, reset the fade timer, and turn on the signaling tone. The mobile station must set the message encryption mode to that indicated by the MEM value obtained from the *Analog Handoff Direction Message*. The mobile station may compare the SID value obtained from the *Analog Handoff Direction Message* with HOME_SID_p. If SID_r = HOME_SID_p, the mobile station may set the ROAM status to disabled. If SID_r is not equal to HOME_SID_p, the mobile station may set the ROAM status to enabled. The mobile station must remain in the Waiting for Answer Task.
 - Within 100 ms of the receipt of any of the orders listed either below or in the corresponding section of TIA/EIA-553-A, the mobile station must compare SCC_s to the PSCC field in the received message. If SCC_s is not equal to PSCC, the order must be ignored. If SCC_s = PSCC, the action to be taken for each order is as follows:
 - *Alert With Info SMS*: Within 750 ms the mobile station must send an Alert With Info SMS Order Confirmation message. Remain in the Waiting for Answer Task.
- Process the Alert With Info SMS message as follows:

- 1 + If the value of the B/F field of the received message is '11', the INFO_DATA
2 field of the received message contains an unsegmented SMS teleservice
3 message. The mobile station may discard any incomplete SMS teleservice
4 message being reassembled, and should pass the INFO_DATA field of the
5 received message to the SMS teleservice. Set the B/F field of the Alert With
6 Info SMS Order Confirmation Message to '1'. If the teleservice reports an
7 error, set the ERROR_CLASS and CAUSE_CODE fields of the Alert With Info
8 SMS Order Confirmation Message to report the teleservice error.
- 9 + If the value of the B/F field of the received message is '10', the mobile station
10 may discard any incomplete SMS teleservice message being reassembled;
11 and must store the INFO_DATA field of the received message as the first
12 segment of an SMS teleservice message being reassembled. Store the value
13 of the SEQ_NO field of the received message in SEQ_NO_s. Set the B/F field
14 of the Alert With Info SMS Order Confirmation Message to '0'.
- 15 + If the value of the B/F field of the received message is '00' and a segmented
16 SMS teleservice message is being reassembled, compare the value of the
17 SEQ_NO field of the received message to SEQ_NO_s. Set the B/F field of the
18 Alert With Info SMS Order Confirmation Message to '0'. Take action as
19 follows:
 - 20 o If $(\text{SEQ_NO}_s + 1) \bmod 8$ is equal to the value of the SEQ_NO field of
21 the received message, store the INFO_DATA field of the received message
22 as the next segment of the SMS teleservice message being reassembled,
23 and increment SEQ_NO_s, modulo 8.
 - 24 o If SEQ_NO_s is equal to the value of the SEQ_NO field of the received
25 message, the mobile station may discard the INFO_DATA field of the
26 received message.
 - 27 o If neither SEQ_NO_s nor $(\text{SEQ_NO}_s + 1) \bmod 8$ is equal to the value of
28 the SEQ_NO field of the received message, the mobile station may
29 discard the INFO_DATA field of the received message and may discard
30 the incomplete SMS teleservice message being reassembled.
- 31 + If the value of the B/F field of the received message is '00', and no segmented
32 SMS teleservice message is being reassembled, the mobile station may
33 discard the INFO_DATA field of the received message. Set the B/F field of
34 the Alert With Info SMS Order Confirmation Message to '0'.
- 35 + If the value of the B/F field of the received message is '01' and a segmented
36 SMS teleservice message is being reassembled, store the INFO_DATA field of
37 the received message as the last segment of the SMS teleservice message and
38 pass the complete SMS teleservice message to the SMS teleservice. Set the
39 B/F field of the Alert With Info SMS Order Confirmation Message to '1'. If
40 the teleservice reports an error, set the ERROR_CLASS and CAUSE_CODE
41 fields of the Alert With Info SMS Order Confirmation Message to report the
42 teleservice error.

- + If the value of the B/F field of the received message is '01', and no segmented SMS teleservice message is being reassembled, the mobile station may discard the INFO_DATA field of the received message. Set the ERROR_CLASS and CAUSE_CODE fields of the Alert With Info SMS Order Confirmation Message to report an error due to reception of an incomplete message. Set the B/F field of the Alert With Info SMS Order Confirmation Message to '0'.

2.6.4.4 Conversation

In addition to the requirements in this section, see the corresponding section of TIA/EIA-553-A.

When this task is entered, in addition to the actions described in the corresponding section of TIA/EIA-553-A, the following may occur:

- If this task is entered as a result of receiving an *Analog Handoff Direction Message* (see 6.6.6.2.9), the mobile station must use the VMAC, ANALOG_CHAN, and SCC values obtained from the *Analog Handoff Direction Message* to perform the following operations: adjust power level, tune to new channel, adjust to new SAT, and set SCC_s to the value of the SCC field of the message (see 2.4.1). The mobile station must then turn on the transmitter, and reset the fade timer. The mobile station must set the message encryption mode to that indicated by the MEM value obtained from the *Analog Handoff Direction Message*. The mobile station may compare the SID value obtained from the *Analog Handoff Direction Message* with HOME_SID_p. If SID_r = HOME_SID_p, the mobile station may set the ROAM status to disabled. If SID_r is not equal to HOME_SID_p, the mobile station may set the ROAM status to enabled. The mobile station must remain in the Conversation Task.
- Within 100 ms of the receipt of any of the orders listed either below or in the corresponding section of TIA/EIA-553-A, the mobile station must compare SCC_s to the PSCC field in the received message. If SCC_s is not equal to PSCC, the order must be ignored. If SCC_s = PSCC, the mobile station must take the following steps. Except for the audit order, mobile stations capable of discontinuous-transmission operation (see 2.3.11) must inhibit discontinuous transmission for 1.5 seconds; that is, for at least 1.5 seconds the mobile station must remain in the DTX-high state. Upon receipt of the audit order, mobile stations capable of discontinuous transmission must inhibit discontinuous transmission for at least 5 seconds. Immediately after determining that SCC_s = PSCC a mobile station not capable of discontinuous transmission or a mobile station capable of discontinuous transmission but in the DTX-high state must take the actions specified below for each order.

If the mobile station is capable of discontinuous transmission and is in the DTX-low state or the transition state when the order arrives, the mobile station must enter the DTX-high state and wait 200 ms. Then it must take the actions specified below for each order.

- *Alert With Info SMS*: Within 750 ms the mobile station must send an Alert With Info SMS Order Confirmation message. Remain in the Conversation Task.

1 Process the Alert With Info SMS message as follows:

- 2 + If the value of the B/F field of the received message is '11', the INFO_DATA
3 field of the received message contains an unsegmented SMS teleservice
4 message. The mobile station may discard any incomplete SMS teleservice
5 message being reassembled, and should pass the INFO_DATA field of the
6 received message to the SMS teleservice. Set the B/F field of the Alert With
7 Info SMS Order Confirmation Message to '1'. If the teleservice reports an
8 error, set the ERROR_CLASS and CAUSE_CODE fields of the Alert With Info
9 SMS Order Confirmation Message to report the teleservice error.
- 10 + If the value of the B/F field of the received message is '10', the mobile station
11 may discard any incomplete SMS teleservice message being reassembled,
12 and must store the INFO_DATA field of the received message as the first
13 segment of an SMS teleservice message being reassembled. Store the value
14 of the SEQ_NO field of the received message in SEQ_NO_s. Set the B/F field
15 of the Alert With Info SMS Order Confirmation Message to '0'.
- 16 + If the value of the B/F field of the received message is '00' and a segmented
17 SMS teleservice message is being reassembled, compare the value of the
18 SEQ_NO field of the received message to SEQ_NO_s. Set the B/F field of the
19 Alert With Info SMS Order Confirmation Message to '0'. Take action as
20 follows:
 - 21 o If $(SEQ_NO_s + 1) \text{ modulo } 8$ is equal to the value of the SEQ_NO field of
22 the received message, store the INFO_DATA field of the received message
23 as the next segment of the SMS teleservice message being reassembled,
24 and increment SEQ_NO_s modulo 8.
 - 25 o If SEQ_NO_s is equal to the value of the SEQ_NO field of the received
26 message, the mobile station may discard the INFO_DATA field of the
27 received message.
 - 28 o If neither SEQ_NO_s nor $(SEQ_NO_s + 1) \text{ modulo } 8$ is equal to the value of
29 the SEQ_NO field of the received message, the mobile station may
30 discard the INFO_DATA field of the received message and may discard
31 the incomplete SMS teleservice message being reassembled.
- 32 + If the value of the B/F field of the received message is '00', and no segmented
33 SMS teleservice message is being reassembled, the mobile station may
34 discard the INFO_DATA field of the received message. Set the B/F field of
35 the Alert With Info SMS Order Confirmation Message to '0'.
- 36 + If the value of the B/F field of the received message is '01' and a segmented
37 SMS teleservice message is being reassembled, store the INFO_DATA field of
38 the received message as the last segment of the SMS teleservice message and
39 pass the complete SMS teleservice message to the SMS teleservice. Set the
40 B/F field of the Alert With Info SMS Order Confirmation Message to '1'. If
41 the teleservice reports an error, set the ERROR_CLASS and CAUSE_CODE
42 fields of the Alert With Info SMS Order Confirmation Message to report the
43 teleservice error.

- 1 + If the value of the B/F field of the received message is '01', and no segmented
2 SMS teleservice message is being reassembled, the mobile station may
3 discard the INFO_DATA field of the received message. Set the
4 ERROR_CLASS and CAUSE_CODE fields of the Alert With Info SMS Order
5 Confirmation Message to report an error due to reception of an incomplete
6 message. Set the B/F field of the Alert With Info SMS Order Confirmation
7 Message to '0'.

8 2.6.4.5 Release

9 See the corresponding section of TIA/EIA-553-A.

10 2.6.4.6 Power Down

11 See the corresponding section of TIA/EIA-553-A.

12 **2.7 Signaling Formats**

13 In addition to the requirements in this section, see the corresponding section of
14 TIA/EIA-553-A.

15 2.7.1 Reverse Analog Control Channel (RECC)

16 In addition to the requirements in this section, see the corresponding section of
17 TIA/EIA-553-A.

18 2.7.1.1 Reverse Analog Control Channel (RECC) Messages

19 In addition to the requirements in this section, see the corresponding section of
20 TIA/EIA-553-A.

21 In addition to the message formats shown in the corresponding section of TIA/EIA-553-A,
22 the following word(s) may be transmitted over the reverse control channel:

Word C - PCI Report Word

| Information Element | Length (bits) |
|----------------------|---------------|
| F = 0 | 1 |
| NAWC | 3 |
| MSPC | 4 |
| MSCAP | 3 |
| CLIC | 1 |
| MWNC | 1 |
| SMSC | 2 |
| PACAC | 1 |
| ENCRYPTION_SUPPORTED | 4 |
| RSVD = 000...000 | 16 |
| P | 12 |

The interpretation of the data fields (not already defined in the corresponding section of TIA/EIA-553-A) is as follows:

- CLIC — Calling Line Identification Capability. Set to '0' to indicate not EP (Extended Protocol) CLI capable. Set to '1' to indicate EP-CLI capable.
- MWNC — Message Waiting Notification Capability. Set to '0' to indicate not EP capable. Set to '1' to indicate EP-Voice Mail Status capable.
- SMSC — Short Message Service Capability.
 00 - Not SMS capable,
 01 - AWI SMS order capable,
 10 - EP-SMS capable,
 11 - AWI SMS and EP-SMS capable.
- PACAC — PACA capability. Set to '0' to indicate not PACA capable. Set to '1' to indicate PACA capability.
- ENCRYPTION_SUPPORTED — Encryption algorithms supported by the mobile station.
 If AUTH is equal to '0', the mobile station shall set this field to '0000'. Otherwise, the mobile station shall set this field as specified in table 6.7.1.3.2.4-5.

2.7.2 Reverse Analog Voice Channel (RVC)

In addition to the requirements in this section, see the corresponding section of TIA/EIA-553-A.

2.7.2.1 Reverse Analog Voice Channel (RVC) Messages

In addition to the requirements in this section, see the corresponding section of TIA/EIA-553-A.

In addition to the RVC messages listed in the corresponding section of TIA/EIA-553-A, formats are shown for the following RVC message types:

- Alert With Info SMS Order Confirmation
- PCI Report Message

Alert With Info SMS Order Confirmation Message

| Information Element | Length (bits) |
|------------------------|---------------|
| F = 1 | 1 |
| NAWC = 00 | 2 |
| T = 1 | 1 |
| LOCAL/MSG_TYPE = 00001 | 5 |
| ORDQ = 000 | 3 |
| ORDER = 10001 | 5 |
| B/F | 1 |
| ERROR_CLASS | 2 |
| CAUSE_CODE | 8 |
| SEQ_NO | 3 |
| RSVD = 00000 | 5 |
| P | 12 |

1 PCI Report Message

| Information Element | Length (bits) |
|---------------------|---------------|
| F = 1 | 1 |
| NAWC = 00 | 2 |
| T = 1 | 1 |
| MSG_TYPE | 5 |
| ORDQ = 100 | 3 |
| ORDER = 11010 | 5 |
| MSPC | 4 |
| MSCAP | 3 |
| CLIC | 1 |
| MWNC | 1 |
| SMSC | 2 |
| PACAC | 1 |
| RSVD = 0000000 | 7 |
| P | 12 |

2

3 The interpretation of the data fields (not already defined in the corresponding section of
4 TIA/EIA-553-A is as follows:

5 B/F — Begin/Final. This field is used to indicate whether the
6 ERROR_CLASS and CAUSE_CODE fields include the
7 teleservice processing result for an SMS teleservice message.
8 If no teleservice processing result is included, this field shall
9 be set to '0'. If a teleservice processing result is included, this
10 field shall be set to '1'.

11 ERROR_CLASS — Error report class.
12 If there is no error, this field shall be set to '00'.
13 If the error is caused by a temporary condition, this field shall
14 be set to '10'. If the error is caused by a permanent condition,
15 this field shall be set to '11'.

16 CAUSE_CODE — Cause code. This field provides the delivery status of SMS
17 user data (see 3.4.3.6 of TIA/EIA/IS-637).

18 SEQ_NO — Sequence number. This field contains the SEQ_NO of the
19 Alert With Info SMS message that is being acknowledged by
20 the mobile station.

21 CLIC — Calling Line Identification Capability. Set to '0' to indicate not
22 EP (Extended Protocol) CLI capable. Set to '1' to indicate EP-
23 CLI capable.

| | | | |
|----|-------|---|---|
| 1 | MWNC | — | Message Waiting Notification Capability. Set to '0' to indicate |
| 2 | | | not EP capable. Set to '1' to indicate EP-Voice Mail Status |
| 3 | | | capable. |
| 4 | SMSC | — | Short Message Service Capability. |
| 5 | | | 00 - Not SMS capable, |
| 6 | | | 01 - AWI SMS order capable, |
| 7 | | | 10 - EP-SMS capable, |
| 8 | | | 11 - AWI SMS and EP-SMS capable. |
| 9 | PACAC | — | PACA capability. Set to '0' to indicate not PACA capable. Set |
| 10 | | | to '1' to indicate PACA capability. |
| 11 | | | |

3 REQUIREMENTS FOR BASE STATION ANALOG OPERATION

Section 3 references TIA/EIA-553-A to describe core analog mode operation. Only those analog capabilities that support the CDMA dual-mode of operation are described in detail here. Subsection numbers in Section 3 of this standard correspond to subsection numbers in TIA/EIA-553-A. A reference in this standard to a particular subsection in TIA/EIA-553-A applies to that subsection and all subsequent subsections beneath it. However, text in a subsection of Section 3 of this standard shall take precedence over any text in the corresponding subsection text in TIA/EIA-553-A.

Base stations optionally implementing PACA service in the analog mode shall support PACA Message and PACA Cancel delivery (see 3.6.2, 3.6.3, 3.6.4 and 3.7.1) on the control channel.

3.1 Transmitter

In addition to the requirements in this section, see the corresponding section of TIA/EIA-553-A.

3.1.1 Frequency Parameters

See the corresponding section of TIA/EIA-553-A.

3.1.2 Power Output Characteristics

See the corresponding section of TIA/EIA-553-A.

3.1.3 Modulation Characteristics

3.1.3.1 Analog Voice Signals

The (FM) modulator is preceded by the following five voice-processing stages (in the order listed):

- Transmit Audio Level Adjustment
- Compressor
- Pre-Emphasis
- Deviation Limiter
- Post Deviation-Limiter Filter

Pending the generation of a complete speech transmission plan for dual-mode cellular systems, the following requirements shall be met to ensure compatibility with the transmission plan for fixed digital speech networks.

3.1.3.1.1 Compressor

See the corresponding section of TIA/EIA-553-A.

3.1.3.1.2 Pre-emphasis

See the corresponding section of TIA/EIA-553-A.

3.1.3.1.3 Deviation Limiter

See the corresponding section of TIA/EIA-553-A.

3.1.3.1.4 Post Deviation-Limiter Filter

See the corresponding section of TIA/EIA-553-A.

3.1.3.1.5 Transmit Level Adjustment

The base station shall set the transmit level so that a 1004 Hz tone at a level of -18 dBm0 at the network interface produces a ± 2.9 kHz peak frequency deviation of the transmitted carrier. Measurement techniques are described in TIA/EIA-97-B.

3.1.3.2 Wideband Data Signals

See the corresponding section of TIA/EIA-553-A.

3.1.4 Limitations on Emissions

3.1.4.1 Bandwidth Occupied

See the corresponding section of TIA/EIA-553-A. Measurement techniques are defined in TIA/EIA-97-B.

3.1.4.2 Conducted Spurious Emissions

Refer to TIA/EIA-97-B.

3.1.4.3 Radiated Spurious Emissions

Refer to TIA/EIA-97-B.

3.1.4.4 Intermodulation

Radiated products from co-located transmitters shall not exceed FCC spurious and harmonic level requirements that would apply to any of the transmitters operated singly.

3.2 Receiver

In addition to the requirements in this section, see the corresponding section of TIA/EIA-553-A.

3.2.1 Frequency Parameters

See the corresponding section of TIA/EIA-553-A.

3.2.2 Demodulation Characteristics

See the corresponding section of TIA/EIA-553-A.

3.2.2.1 Analog Voice Signals

The demodulator is followed by the following three voice-signal processing stages:

- De-emphasis
- Expander
- Receive Audio Level Adjustment

Pending the generation of a complete speech transmission plan for dual-mode cellular systems, the following requirements shall be met to ensure compatibility with the transmission plan for fixed digital speech networks.

3.2.2.1.1 De-emphasis

See the corresponding section of TIA/EIA-553-A.

3.2.2.1.2 Expander

See the corresponding section of TIA/EIA-553-A.

3.2.2.1.3 Audio Level Adjustment

The base station shall set the audio level so that a received 1004 Hz tone with a ± 2.9 kHz peak frequency deviation produces a level of -18 dBm0 at the network interface. Measurement techniques are described in TIA/EIA-97-B.

3.2.3 Limitations on Emissions

Refer to TIA/EIA-97-B.

3.2.4 Other Receiver Parameters

System performance is predicated upon receivers meeting TIA/EIA-97-B.

3.3 Security and Identification

In addition to the requirements in this section, see the corresponding section of TIA/EIA-553-A.

3.3.1 Authentication

See the corresponding section of TIA/EIA-553-A.

3.3.2 Encryption

If the base station supports mobile station authentication (see 3.3.1), it may also support message encryption by providing the capability to send encrypted control messages and to perform the operations of encryption and decryption as specified in 2.3.12.2.

3.4 Supervision

See the corresponding section of TIA/EIA-553-A.

3.5 Malfunction Detection

Reserved.

3.6 Call Processing

In addition to the requirements in this section, see the corresponding section of TIA/EIA-553-A.

3.6.1 Overhead Functions for Mobile Station Initiation

See the corresponding section of TIA/EIA-553-A.

3.6.2 Mobile Station Control on the Control Channel

3.6.2.1 Overhead Information

In addition to the overhead information defined in the corresponding section of TIA/EIA-553-A, the following overhead information is sent as required in messages appended to a System Parameter Overhead Message (see 3.7.1.2 for messages formats):

- *CDMA capability.* A system may indicate that it is capable of CDMA operation by sending the CDMA Capability Global Action Message with the CDMA_AVAIL field set to '1'. If CDMA_AVAIL is set to '1', the base station must set the CDMA_FREQ field to the channel number of the CDMA frequency assignment that the mobile station is to acquire. A system may also indicate the availability of additional CDMA systems by sending the CDMA Capability Global Action Message with the ADD_CDMA_AVAIL field set to '1'.

3.6.2.2 Page

In addition to the requirements in this section, see the corresponding section of TIA/EIA-553-A.

3.6.2.3 Order

In addition to the orders and order confirmations defined in the corresponding section of TIA/EIA-553-A, the following orders and order confirmations may be transmitted:

- PACA Message.
- PCI Query order.
- CDMA Info order.

3.6.2.4 Local Control

See the corresponding section of TIA/EIA-553-A.

3.6.3 Base Station Support of System Access by Mobile Stations

3.6.3.1 Overhead Information

See the corresponding section of TIA/EIA-553-A.

3.6.3.2 Reverse Control Channel Seizure by Mobile Stations

See the corresponding section of TIA/EIA-553-A.

3.6.3.3 Response to Mobile Station Messages

In addition to the mobile station message responses defined in the corresponding section of TIA/EIA-553-A, the following response to mobile station messages may be sent:

- *PACA response.* Send one of the following orders:
 - Initial voice channel designation,
 - Directed retry,
 - Intercept,
 - Reorder.
- *Order message.* When the base station receives a Base Station Challenge Order from the mobile station, it should perform the authentication procedure as defined in 2.3.12.1.8. The base station must then send the order confirmation to the mobile station containing the algorithm output. When the base station receives a CDMA Query Order from the mobile station, it must send the CDMA Info Order to the mobile station. For all other orders, the base station should send one of the following orders:
 - Order confirmation,
 - Release.

3.6.4 Mobile Station Control on Voice Channel

See the corresponding section of TIA/EIA-553-A.

3.6.4.1 Loss of Radio-Link Continuity

Reserved.

3.6.4.2 Initial Voice Channel Confirmation

See the corresponding section of TIA/EIA-553-A.

3.6.4.3 Alerting

3.6.4.3.1 Waiting for Order

When the mobile station confirms the initial voice channel designation after having been paged, it enters this task. In addition to the orders listed in the corresponding section of TIA/EIA-553-A, the following orders can be sent to the mobile station, with the resultant confirmation and action to be taken as follows:

- *Handoff (to Digital Traffic Channel).* Requires further study.

- *Alert with Info SMS.* Within 750 ms, the mobile station confirms the order by sending an Alert With Info SMS Order Confirmation message. The SEQ_NO received in the Alert With Info SMS Order Confirmation message, SEQ_NO_r, is compared to the SEQ_NO transmitted in the last Alert With Info SMS message, SEQ_NO_s. If the comparison results in a match, the base station may transmit the next pending Alert With Info SMS message. If the comparison results in a mismatch, the base station must not transmit any new Alert With Info SMS messages and may re-transmit the unacknowledged Alert With Info SMS message until that outstanding Alert With Info SMS message is received as indicated by a match of SEQ_NO_r and SEQ_NO_s. Then, if the channel was allocated to deliver SMS messages, the base station should send a Release order. Otherwise the base station must remain in the Waiting for Order Task.

3.6.4.3.2 Waiting for Answer

When this task is entered, an alert timer may be set. In addition to the orders listed in the corresponding section of TIA/EIA-553-A, the following orders can be sent with the confirmation and action to be taken as follows:

- *Handoff (to Digital Traffic Channel).* Requires further study.
- *Alert with Info SMS.* Within 750 ms, the mobile station confirms the order by sending an Alert With Info SMS Order Confirmation message. The SEQ_NO received in the Alert With Info SMS Order Confirmation message, SEQ_NO_r, is compared to the SEQ_NO transmitted in the last Alert With Info SMS message, SEQ_NO_s. If the comparison results in a match, the base station may transmit the next pending Alert With Info SMS message. If the comparison results in a mismatch, the base station must not transmit any new Alert With Info SMS messages and may re-transmit the unacknowledged Alert With Info SMS message until that outstanding Alert With Info SMS message is received as indicated by a match of SEQ_NO_r and SEQ_NO_s. Then, if the channel was allocated to deliver SMS messages, the base station should send a Release order. Otherwise the base station must remain in the Waiting for Answer Task.

1 3.6.4.4 Conversation

2 While the base station is in the Conversation Task, in addition to the orders listed in the
3 corresponding section of TIA/EIA-553-A, the following orders can be sent to the mobile
4 station, with confirmation and action to be taken as follows:

- 5 • *Alert with Info SMS.* Within 750 ms, the mobile station confirms the order by
6 sending an Alert With Info SMS Order Confirmation message. The SEQ_NO received
7 in the Alert With Info SMS Order Confirmation message, SEQ_NO_r, is compared to
8 the SEQ_NO transmitted in the last Alert With Info SMS message, SEQ_NO_s. If the
9 comparison results in a match, the base station may transmit the next pending
10 Alert With Info SMS message. If the comparison results in a mismatch, the base
11 station must not transmit any new Alert With Info SMS messages and may re-
12 transmit the unacknowledged Alert With Info SMS message until that outstanding
13 Alert With Info SMS message is received as indicated by a match of SEQ_NO_r and
14 SEQ_NO_s. The base station must remain in the Conversation Task.

15 If the call is mobile station originated and it is re-originated using the PACA message
16 (PURPOSE_r = '0010'), the base station should send an Alert With Information message.

17 3.6.5 Delivery of Character Information

18 See 3.7.2.2 of this standard, titled "Calling Number Identification (CNI)".

19 3.7 Signaling Formats

20 In addition to the requirements in this section, see the corresponding section of
21 TIA/EIA-553-A for operation in the analog mode.

22 3.7.1 Forward Analog Control Channel

23 See the corresponding section of TIA/EIA-553-A.

24 3.7.1.1 Mobile Station Control Message

25 In addition to the message formats defined in the corresponding section of TIA/EIA-553-A,
26 the Mobile Station Control Message can contain the following words:

27

Word 3 - PACA Word

| Information Element | Length (bits) |
|---------------------|---------------|
| $T_1T_2 = 10$ | 2 |
| SCC = 11 | 2 |
| PURPOSE | 4 |
| Q_POS | 8 |
| RSVD | 12 |
| P | 12 |

Word 3 - First CDMA Info Word

| Information Element | Length (bits) |
|---------------------|---------------|
| $T_1T_2 = 10$ | 2 |
| SCC = 11 | 2 |
| BAND_CLASS | 5 |
| CDMA_FREQ | 11 |
| RSVD | 8 |
| P | 12 |

Word 4 - Second CDMA Info Word

| Information Element | Length (bits) |
|---------------------|---------------|
| $T_1T_2 = 10$ | 2 |
| SCC = 11 | 2 |
| SID | 15 |
| RSVD | 9 |
| P | 12 |

The interpretation of the data fields (not already defined in the corresponding section of TIA/EIA-553-A) is as follows:

PURPOSE — Purpose of PACA message. The base station must set this field to the appropriate PURPOSE code from Table 3.7.1.1-2 to indicate the purpose of the message.

Q_POS — PACA queue position. If the PURPOSE field of this message is set to '0000' or '0001', the base station must set this field to the queue position of the PACA call. If the queue position is unknown, the base station must set this field to '00000000'. If the queue position exceeds 255, the base station must set this field to '11111111'.

1 CDMA_FREQ — CDMA frequency. The base station must set this field to the
 2 CDMA Channel number of the CDMA frequency assignment to
 3 acquire.

4 SID — System identification. The base station must set this field to
 5 the system identification of the CDMA system.
 6

7 **Table 3.7.1.1-1. Order, Order Qualification, and Message Type Codes**

| Order Code | Qual Code | Message Type | Function |
|--|-----------|--------------|--|
| 10001 | 000 | 00001 | Alert With Info SMS |
| 00010 | 010 | 00000 | PACA Message (or PACA Response) |
| 00011 | 100 | 00000 | PACA Cancel |
| 11010 | 000 | 10000 | CDMA Query Order/CDMA Info Order |
| [Base station initiated messages only - Mobile Station Authentication and Privacy] | | | |
| 10111 | 001 | 00000 | Message Encryption Mode Order with Basic Message Encryption enable indication |
| 10111 | 010 | 00000 | Message Encryption Mode Order with Enhanced Message Encryption enable indication |

8
 9 The order and order qualification codes defined in Table 3.7.1.1-1 are in addition to the
 10 codes defined in TIA/EIA-553-A, Table 3.7.1-1. All other codes are reserved.
 11

12 **Table 3.7.1.1-2. PACA PURPOSE Codes**

| PURPOSE Code | Function |
|--------------|---|
| 0000 | Indicates that the purpose of the PACA message is to respond to an Origination Message. |
| 0001 | Indicates that the purpose of the PACA message is to provide the queue position of the PACA call. |
| 0010 | Indicates that the purpose of the PACA message is to instruct the mobile station to re-originate the PACA call. |
| 0011 | Indicates that the purpose of the PACA message is to cancel the PACA call. |

3.7.1.2 Overhead Message

See the corresponding section of TIA/EIA-553-A.

3.7.1.2.1 System Parameter Overhead Message

In addition to the requirements in this section, see the corresponding section of TIA/EIA-553-A for operation in the analog mode.

Note: The base station shall set EP = '0' in Word 1 of the System Parameter Overhead Message, except when implementing the optional procedures in Section 5 (see 5.1).

3.7.1.2.2 Global Action Overhead Message

In addition to the Global Action Overhead Messages listed in this section, see the corresponding section of TIA/EIA-553-A for operation in the analog mode.

CDMA Capability Global Action Message

| Information Element | Length (bits) |
|---------------------|---------------|
| $T_1 T_2 = 11$ | 2 |
| DCC | 2 |
| ACT = 0100 | 4 |
| CDMA_FREQ | 11 |
| CDMA_AVAIL | 1 |
| ADD_CDMA_AVAIL | 1 |
| RSVD = 000 | 3 |
| END | 1 |
| OHD = 100 | 3 |
| P | 12 |

The interpretation of the data fields (not already defined in the corresponding section of TIA/EIA-553-A) is as follows:

- CDMA_FREQ — Channel number of the CDMA frequency assignment to acquire.
- CDMA_AVAIL — Set to '1' if Band Class 0 CDMA is available.
- ADD_CDMA_AVAIL — Set to '1' if additional CDMA systems are available.

3.7.1.2.3 Registration ID Message

In addition to the definitions in this section, see the corresponding section of TIA/EIA-553-A for operation in the analog mode.

Table 3.7.1.2.3-1. Global Action Message Types

| Action Code | Type |
|-------------|-----------------|
| 0100 | CDMA Capability |

The Global Action Message codes defined in Table 3.7.1.2.3-1 are in addition to the codes defined in Table 3.7.1-4 of TIA/EIA-553-A.

3.7.1.2.4 Control-Filler Message

See the corresponding section of TIA/EIA-553-A for operation in the analog mode.

3.7.1.3 Data Restrictions

See the corresponding section of TIA/EIA-553-A for operation in the analog mode.

3.7.2 Forward Analog Voice Channel

See the corresponding section of TIA/EIA-553-A.

3.7.2.1 Mobile Station Control Message

In addition to the Mobile Station Control Message defined in this section, see the corresponding section of TIA/EIA-553-A for operation in the analog mode.

Word 2 - First Alert With Info SMS Word

| Information Element | Length (bits) |
|---------------------|---------------|
| $T_1T_2 = 01$ | 2 |
| RL_W | 7 |
| SEQ_NO | 3 |
| B/F | 2 |
| TASK_TM | 1 |
| RSVD = 00000 | 5 |
| INFO_DATA | 8 |
| P | 12 |

Word 3 - Second Alert With Info SMS Word

| Information Element | Length (bits) |
|---------------------|---------------|
| $T_1T_2 = 01$ | 2 |
| RSVD = 00 | 2 |
| INFO_DATA | 24 |
| P | 12 |

Word N - (N-1)th Alert With Info SMS Word

| Information Element | Length (bits) |
|---------------------|---------------|
| $T_1T_2 = 01$ | 2 |
| RSVD = 00 | 2 |
| INFO_DATA | 24 |
| P | 12 |

The interpretation of the data fields (not already defined in the corresponding section of TIA/EIA-553-A) is as follows:

RL_W — The remaining length, in 'Words', of the Alert With Info SMS word.

SEQ_NO — Sequence number. This field contains the modulo-8 sequence number of the Alert With Info SMS message. This field shall be initialized to '000', and reset to '000' when transmitting a new SMS teleservice message.

If an SMS teleservice message spans more than one Alert With Info SMS message, the sequence number shall be incremented by 1, modulo 8, for each additional Alert With Info SMS message that is a segment of the SMS teleservice message.

B/F — Begin/Final. This field is used to specify whether the SMS teleservice message has been segmented into multiple Alert With Info SMS messages. If the SMS teleservice message is completely contained in a single Alert With Info SMS message, this field shall be set to '11'. For an SMS teleservice message contained in multiple Alert With Info SMS messages, the first segment shall have a value of '10', intermediate segments shall have a value of '00' and the final segment shall have a value of '01'. A mobile station must assemble messages for receipt by the SMS teleservice.

1 TASK_TM — Task Timer. This field is included in the Alert With Info SMS
2 message to specify the Waiting for Order Task timeout period.
3 A value of '0' indicates a 10-second order timer shall be used
4 by the mobile station, and a value of '1' indicates that a 600
5 ms order timer shall be used.

6 INFO_DATA — Info data. This field contains the SMS teleservice message
7 data (see TIA/EIA/IS-637).

8 3.7.2.2 Calling Number Identification (CNI)

9 Whenever two instances of CNI need to be sent to a mobile station on the Forward Analog
10 Voice Channel then the base station shall transmit the second instance of CNI using a
11 "Flash With Info" message. This allows for PI and SI information to be uniquely specified
12 for each instance of CNI.

13

1 No text.

2

1 **4 REQUIREMENTS FOR MOBILE STATION ANALOG OPTIONS**

2 See the corresponding section of TIA/EIA-691 for optional extended protocol services.

3

1

2 No text.

1 **5 REQUIREMENTS FOR BASE STATION ANALOG OPTIONS**

2 See the corresponding section of TIA/EIA-691 for optional extended protocol services.

3

1

2 No text.

3

6 REQUIREMENTS FOR MOBILE STATION CDMA OPERATION

This section defines requirements that are specific to CDMA mobile station equipment and operation. A CDMA mobile station may support operation in one or more band classes. See Section 2 and Section 4 for analog cellular mobile station requirements.

6.1 Transmitter

6.1.1 Frequency Parameters

6.1.1.1 Channel Spacing and Designation

6.1.1.1.1 Cellular Band

The Band Class 0 system designators for the mobile station and base station shall be as specified in Table 6.1.1.1.1-1.

Mobile stations supporting Band Class 0 shall be capable of transmitting in Band Class 0. The channel spacings, CDMA channel designations, and transmit center frequencies of Band Class 0 shall be as specified in Table 6.1.1.1.1-2. Mobile stations supporting Band Class 0 shall support operations on channel numbers 1013 through 1023, 1 through 311, 356 through 644, 689 through 694, and 739 through 777 inclusive as shown in Table 6.1.1.1.1-3.

Channel numbers for the Primary CDMA Channel and the Secondary CDMA Channel are given in 6.1.1.1.1-4.

Table 6.1.1.1.1-1. Band Class 0 System Frequency Correspondence

| System Designator | Transmit Frequency Band (MHz) | |
|-------------------|-------------------------------|-----------------|
| | Mobile Station | Base Station |
| A | 824.025-835.005 | 869.025-880.005 |
| | 844.995-846.495 | 889.995-891.495 |
| B | 835.005-844.995 | 880.005-889.995 |
| | 846.495-848.985 | 891.495-893.985 |

Table 6.1.1.1.1-2. CDMA Channel Number to CDMA Frequency Assignment Correspondence for Band Class 0

| Transmitter | CDMA Channel Number | CDMA Frequency Assignment, MHz |
|----------------|-------------------------|--------------------------------|
| Mobile Station | $1 \leq N \leq 777$ | $0.030 N + 825.000$ |
| | $1013 \leq N \leq 1023$ | $0.030 (N-1023) + 825.000$ |
| Base Station | $1 \leq N \leq 777$ | $0.030 N + 870.000$ |
| | $1013 \leq N \leq 1023$ | $0.030 (N-1023) + 870.000$ |

Table 6.1.1.1.1-3. CDMA Channel Numbers and Corresponding Frequencies for Band Class 0

| Block Designator | Valid CDMA Frequency Assignments | CDMA Channel Number | Transmit Frequency Band (MHz) | |
|------------------|----------------------------------|---------------------|-------------------------------|-----------------|
| | | | Mobile Station | Base Station |
| A" (1 MHz) | Not Valid | 991-1012 | 824.040-824.670 | 869.040-869.670 |
| | Valid | 1013-1023 | 824.700-825.000 | 869.700-870.000 |
| A (10 MHz) | Valid | 1-311 | 825.030-834.330 | 870.030-879.330 |
| | Not Valid | 312-333 | 834.360-834.990 | 879.360-879.990 |
| B (10 MHz) | Not Valid | 334-355 | 835.020-835.650 | 880.020-880.650 |
| | Valid | 356-644 | 835.680-844.320 | 880.680-889.320 |
| | Not Valid | 645-666 | 844.350-844.980 | 889.350-889.980 |
| A' (1.5 MHz) | Not Valid | 667-688 | 845.010-845.640 | 890.010-890.640 |
| | Valid | 689-694 | 845.670-845.820 | 890.670-890.820 |
| | Not Valid | 695-716 | 845.850-846.480 | 890.850-891.480 |
| B' (2.5 MHz) | Not Valid | 717-738 | 846.510-847.140 | 891.510-892.140 |
| | Valid | 739-777 | 847.170-848.310 | 892.170-893.310 |
| | Not Valid | 778-799 | 848.340-848.970 | 893.340-893.970 |

Table 6.1.1.1.1-4. CDMA Preferred Set of Frequency Assignments for Band Class 0

| System Designator | Preferred Set Channel Numbers |
|-------------------|-----------------------------------|
| A | 283 (Primary) and 691 (Secondary) |
| B | 384 (Primary) and 777 (Secondary) |

6.1.1.1.2 PCS Band

The Band Class 1 block designators for the mobile station and base station shall be as specified in Table 6.1.1.1.2-1.

Mobile stations supporting Band Class 1 shall be capable of transmitting in Band Class 1. The channel spacings, CDMA channel designations, and transmit center frequencies of Band Class 1 shall be as specified in Table 6.1.1.1.2-2. Mobile stations supporting Band Class 1 shall support operations on channel numbers 25 through 1175 as shown in Table 6.1.1.1.2-3. Note that certain channel assignments are not valid and others are conditionally valid. Transmission on conditionally valid channels is permissible if the adjacent block is allocated to the same licensee or if other valid authorization has been obtained.

A preferred set of CDMA frequency assignments is given in Table 6.1.1.1.2-4 (see 6.6.1).

Table 6.1.1.1.2-1. Band Class 1 System Frequency Correspondence

| Block Designator | Transmit Frequency Band (MHz) | |
|------------------|-------------------------------|--------------|
| | Mobile Station | Base Station |
| A | 1850-1865 | 1930-1945 |
| D | 1865-1870 | 1945-1950 |
| B | 1870-1885 | 1950-1965 |
| E | 1885-1890 | 1965-1970 |
| F | 1890-1895 | 1970-1975 |
| C | 1895-1910 | 1975-1990 |

Table 6.1.1.1.2-2. CDMA Channel Number to CDMA Frequency Assignment Correspondence for Band Class 1

| Transmitter | CDMA Channel Number | Center Frequency of CDMA Channel in MHz |
|----------------|----------------------|---|
| Mobile Station | $0 \leq N \leq 1199$ | $1850.000 + 0.050 N$ |
| Base Station | $0 \leq N \leq 1199$ | $1930.000 + 0.050 N$ |

Table 6.1.1.1.2-3. CDMA Channel Numbers and Corresponding Frequencies for Band Class 1

| Block Designator | Valid CDMA Frequency Assignments | CDMA Channel Number | Transmit Frequency Band (MHz) | |
|------------------|----------------------------------|---------------------|-------------------------------|-------------------|
| | | | Mobile Station | Base Station |
| A (15 MHz) | Not Valid | 0-24 | 1850.000-1851.200 | 1930.000-1931.200 |
| | Valid | 25-275 | 1851.250-1863.750 | 1931.250-1943.750 |
| | Cond. Valid | 276-299 | 1863.800-1864.950 | 1943.800-1944.950 |
| D (5 MHz) | Cond. Valid | 300-324 | 1865.000-1866.200 | 1945.000-1946.200 |
| | Valid | 325-375 | 1866.250-1868.750 | 1946.250-1948.750 |
| | Cond. Valid | 376-399 | 1868.800-1869.950 | 1948.800-1949.950 |
| B (15 MHz) | Cond. Valid | 400-424 | 1870.000-1871.200 | 1950.000-1951.200 |
| | Valid | 425-675 | 1871.250-1883.750 | 1951.250-1963.750 |
| | Cond. Valid | 676-699 | 1883.800-1884.950 | 1963.800-1964.950 |
| E (5 MHz) | Cond. Valid | 700-724 | 1885.000-1886.200 | 1965.000-1966.200 |
| | Valid | 725-775 | 1886.250-1888.750 | 1966.250-1968.750 |
| | Cond. Valid | 776-799 | 1888.800-1889.950 | 1968.800-1969.950 |
| F (5 MHz) | Cond. Valid | 800-824 | 1890.000-1891.200 | 1970.000-1971.200 |
| | Valid | 825-875 | 1891.250-1893.750 | 1971.250-1973.750 |
| | Cond. Valid | 876-899 | 1893.800-1894.950 | 1973.800-1974.950 |
| C (15 MHz) | Cond. Valid | 900-924 | 1895.000-1896.200 | 1975.000-1976.200 |
| | Valid | 925-1175 | 1896.250-1908.750 | 1976.250-1988.750 |
| | Not Valid | 1176-1199 | 1908.800-1909.950 | 1988.800-1989.950 |

Table 6.1.1.1.2-4. CDMA Preferred Set of Frequency Assignments for Band Class 1

| Block Designator | Preferred Set Channel Numbers |
|------------------|---|
| A | 25, 50, 75, 100, 125, 150, 175, 200, 225, 250, 275 |
| D | 325, 350, 375 |
| B | 425, 450, 475, 500, 525, 550, 575, 600, 625, 650, 675 |
| E | 725, 750, 775 |
| F | 825, 850, 875 |
| C | 925, 950, 975, 1000, 1025, 1050, 1075, 1100, 1125, 1150, 1175 |

6.1.1.2 Frequency Tolerance

When operating in Band Class 0, the mobile station shall meet the requirements in Section 10.1.1 of TIA/EIA-98-B. When operating in Band Class 1, the mobile station shall meet the requirements in Section 4.1.1 of ANSI J-STD-018.

6.1.2 Power Output Characteristics

All power levels are referenced to the mobile station antenna connector unless otherwise specified.

6.1.2.1 Maximum Output Power

When operating in Band Class 0, the mobile station shall meet the requirements in Sections 10.4.5 and 11.1 of TIA/EIA-98-B. When operating in Band Class 1, the mobile station shall meet the requirements in Sections 4.4.5 and 5.1 of ANSI J-STD-018.

The mobile station shall be capable of transmitting at the minimum specified power level when commanded to maximum output power except when transmitting on one or more Reverse Supplemental Code Channels. The mobile station shall not exceed the maximum specified power levels under any circumstances.

6.1.2.2 Output Power Limits

6.1.2.2.1 Minimum Controlled Output Power

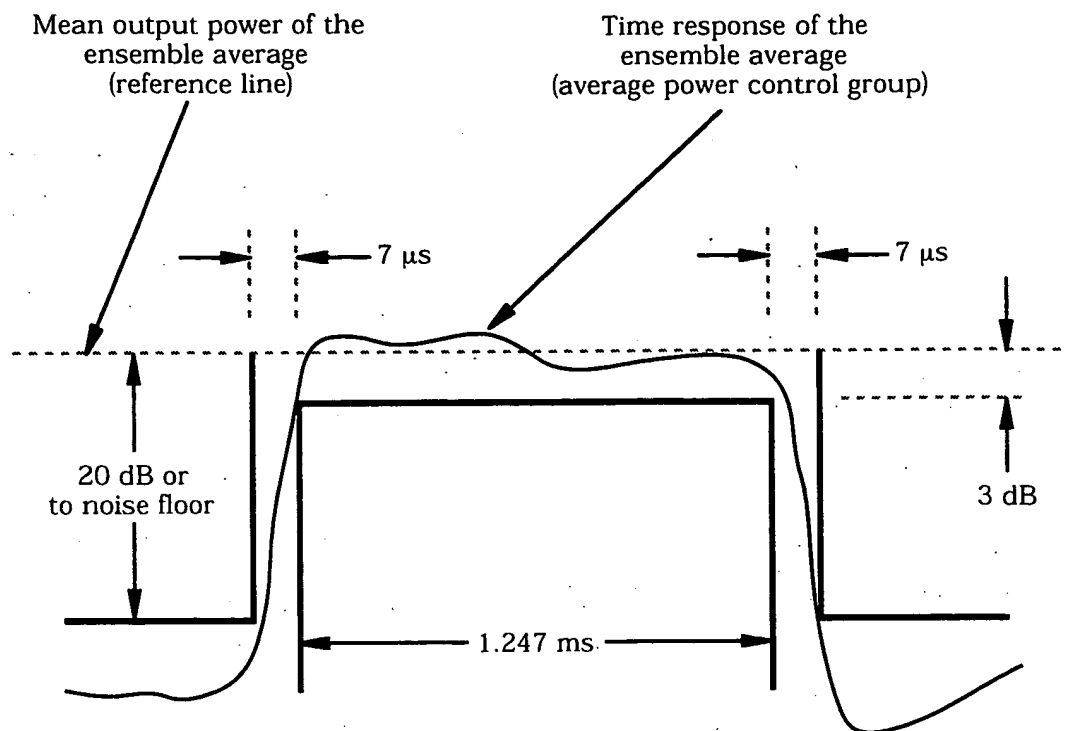
When operating in Band Class 0, the mobile station shall meet the requirements in Section 10.4.6 of TIA/EIA-98-B. When operating in Band Class 1, the mobile station shall meet the requirements in Section 4.4.6 of ANSI J-STD-018.

6.1.2.2.2 Gated Output Power

6.1.2.2.2.1 Gated Output Power - Normal Operation

A mobile station operating in Band Class 1 shall use the gated output power requirements in this Standard in lieu of the those given in ANSI J-STD-018.

When operating in variable data rate transmission mode, the mobile station transmits at nominal controlled power levels only during gated-on periods, each defined as a power control group (see 6.1.3.1.7.1). Given an ensemble of power control groups for the Fundamental Code Channel, all with the same mean output power, the time response of the ensemble average shall be within the limits shown in Figure 6.1.2.2.2.1-1. During gated-off periods, between the transmissions of power control groups, the mobile station shall reduce its mean output power for the Fundamental Code Channel either by at least 20 dB with respect to the mean output power of the most recent power control group, or to the transmitter noise floor, whichever is the greater power. The transmitter noise floor should be less than -60 dBm/1.23 MHz and shall be less than -54 dBm/1.23 MHz.



**Figure 6.1.2.2.1-1. Transmission Envelope Mask
(Average Gated-on Power Control Group)**

6.1.2.2.2.2 Gated Output Power During a Serving Frequency PUF Probe

If the mobile station transmits gated-off power control groups during the PUF recovery time, the mobile station shall reduce its mean output power either by at least 20 dB with respect to the mean output power of the power control group prior to the final power control group of the PUF Setup time, or to the transmitter noise floor, whichever is the greater power.

6.1.2.2.3 Standby Output Power

The mobile station shall disable its transmitter except when transmitting an access probe when in the *System Access State* or when in the *Mobile Station Control on the Traffic Channel State* (see 6.6.3 and 6.6.4).

When the transmitter of a mobile station supporting Band Class 0 is disabled, the output noise density of the mobile station shall be less than -60 dBm/1.23 MHz for all frequencies within the mobile station's transmit band between 824 and 849 MHz.

When the transmitter of a mobile station supporting Band Class 1 is disabled, the output noise density of the mobile station shall be less than -60 dBm/1.23 MHz for all frequencies within the mobile station's transmit band between 1850 and 1910 MHz.

6.1.2.3 Controlled Output Power

The mobile station shall provide two independent means for output power adjustment: open loop estimation performed by the mobile station and closed loop correction involving both the mobile station and the base station.

Accuracy requirements on the controlled range of mean output power (see 6.1.2.4) need not apply for the following three cases: mean output power levels exceeding the minimum EIRP at the maximum output power for the corresponding mobile station class (see TIA/EIA-98-B); mean output power levels less than the minimum controlled output power (see 6.1.2.2.1); or mean input power levels exceeding -25 dBm within the 1.23 MHz CDMA bandwidth.

6.1.2.3.1 Estimated Open Loop Output Power

In the following equations, mean power is referenced to the nominal CDMA Channel bandwidth of 1.23 MHz. The offset power is summarized in Table 6.1.2.3.1-1.

Table 6.1.2.3.1-1. Open Loop Power Offsets

| Band Class | Offset Power |
|------------|--------------|
| 0 | -73 |
| 1 | -76 |

For open loop probing on the Access Channel (with closed loop correction inactive) the mobile station shall transmit the first probe at a mean output power level defined by¹

$$\begin{aligned} \text{mean output power (dBm)} = & - \text{mean input power (dBm)} \\ & + \text{offset power} \\ & + \text{interference correction} \\ & + \text{NOM_PWR} - 16 \times \text{NOM_PWR_EXT} \\ & + \text{INIT_PWR.} \end{aligned}$$

where interference correction = $\min(\max(-7 - \text{ECIO}, 0), 7)$ and ECIO is the E_c/I_o (dB) of the active set pilot, measured within the previous 500 ms.

The mobile station shall update the mean output power for subsequent probes in an access probe sequence by incrementing each probe power by a value equal to PWR_STEP_s plus the

¹ The purpose of having two parameters is to distinguish between their use. If INIT_PWR were 0, then $\text{NOM_PWR} - 16 \times \text{NOM_PWR_EXT}$ would be the correction that should provide the correct received power at the base station. $\text{NOM_PWR} - 16 \times \text{NOM_PWR_EXT}$ allows the open loop estimation process to be adjusted for different operating environments. INIT_PWR is the adjustment that is made to the first Access Channel probe so that it should be received at somewhat less than the required signal power. This conservatism partially compensates for occasional, partially decorrelated path losses between the Forward CDMA Channel and the Reverse CDMA Channel. For example, the constant -76 is equal to $10 \times \log_{10}(10^{-7.6} \text{ mW}^2)$. For simplicity, the constant is expressed as -76 with no units.

mean input power change plus the interference correction change from the previous access probe.

The initial transmission on the Reverse Traffic Channel shall be at a mean output power defined by

$$\begin{aligned} \text{mean output power (dBm)} = & - \text{mean input power (dBm)} \\ & + \text{offset power} \\ & + \text{interference correction from the last access probe} \\ & + \text{NOM_PWR} - 16 \times \text{NOM_PWR_EXT} \\ & + \text{INIT_PWR} \\ & + \text{the sum of all access probe corrections (dB)}. \end{aligned}$$

Once the first power control bit has been received after initializing Reverse Traffic Channel transmissions, the mean output power for normal operation shall be defined by

$$\begin{aligned} \text{mean output power (dBm)} = & - \text{mean input power (dBm)} \\ & + \text{offset power} \\ & + \text{interference correction from the last access probe} \\ & + \text{NOM_PWR} - 16 \times \text{NOM_PWR_EXT} \\ & + \text{INIT_PWR} \\ & + \text{the sum of all access probe corrections (dB)} \\ & + \text{the sum of all closed loop power control corrections (dB)} \\ & + 10 \times \log_{10} (1 + \text{reverse_supplemental_channels}) \text{ (dB)}. \end{aligned}$$

During a PUF pulse, the mean output power shall be defined by

$$\begin{aligned} \text{mean output power (dBm)} = & - \text{mean input power (dBm)} \\ & + \text{offset power} \\ & + \text{interference correction from the last access probe} \\ & + \text{NOM_PWR} - 16 \times \text{NOM_PWR_EXT} \\ & + \text{INIT_PWR} \\ & + \text{the sum of all access probe corrections (dB)} \\ & + \text{the sum of all closed loop power control corrections (dB)} \\ & + \text{PUF_INIT_PWR}_S \\ & + (\text{CURRENT_PUF_PROBE}_S \times \text{PUF_PWR_STEP}_S). \end{aligned}$$

The value of reverse_supplemental_channels is the number of Reverse Supplemental Code Channels on which the mobile station is transmitting.

The values for NOM_PWR, NOM_PWR_EXT, INIT_PWR, and the step size of a single access probe correction PWR_STEP are system parameters specified in the *Access Parameters Message* (see 7.7.2.3.2.2) and are obtained by the mobile station prior to transmitting. If as the result of an *Extended Handoff Direction Message* (see 7.7.3.3.2.17) or a *General Handoff Direction Message* (see 7.7.3.3.2.31) the NOM_PWR and NOM_PWR_EXT values change, the mobile station shall use the NOM_PWR and NOM_PWR_EXT values from the *Extended Handoff Direction Message* or the *General Handoff Direction Message*.

The total range of the NOM_PWR - 16 × NOM_PWR_EXT correction is -24 to +7 dB. While operating in Band Class 0, NOM_PWR_EXT is set to 0, making the total range of the correction from -8 to +7 dB. The range of the INIT_PWR parameter is -16 to +15 dB, with a

1 nominal value of 0 dB. The range of the PWR_STEP parameter is 0 to 7 dB. The accuracy
 2 of the adjustment to the mean output power due to NOM_PWR, NOM_PWR_EXT, INIT_PWR,
 3 or a single access probe correction of PWR_STEP shall be ± 0.5 dB or $\pm 20\%$, whichever is
 4 greater.

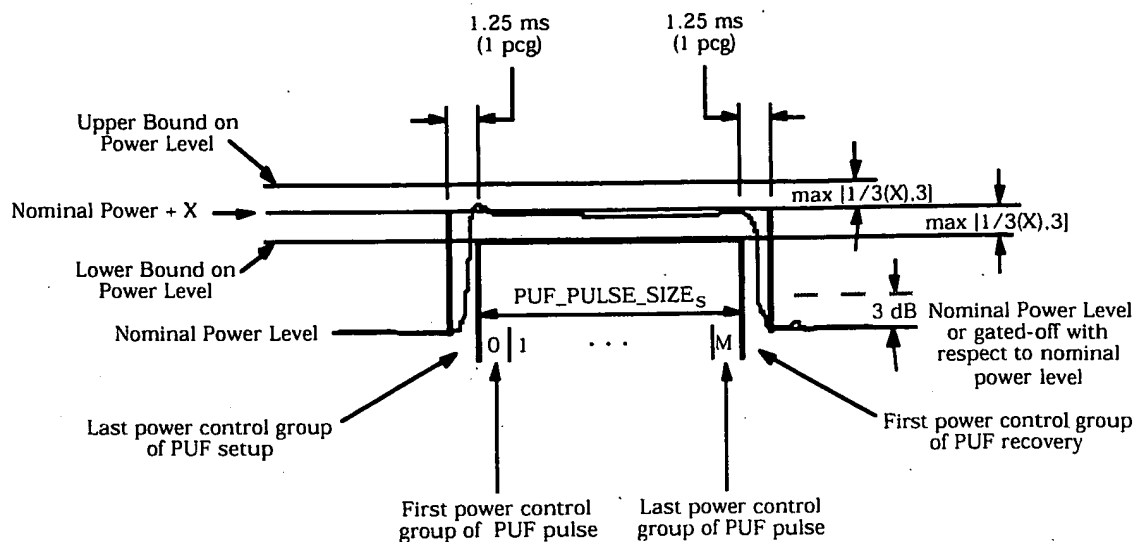
5 The mobile station shall support a total combined range of initial offset parameters, closed
 6 loop corrections, as determined by NOM_PWR, NOM_PWR_EXT, INIT_PWR, access probe
 7 corrections, and closed loop power control corrections of at least ± 32 dB for mobile stations
 8 operating in Band Class 0 and ± 40 dB for mobile stations operating in Band Class 1.

9 The mobile station shall not begin to increase power for a PUF pulse earlier than one power
 10 control group before the beginning of the PUF pulse. The mean output power should reach
 11 the PUF pulse power by the beginning of the PUF pulse, and shall reach the PUF pulse
 12 power by the end of the first power control group of the PUF pulse. After the end of a PUF
 13 pulse transmitted on the serving frequency, the mean output power shall return to either
 14 the gated-on or gated-off level by the end of the first power control group of the PUF
 15 recovery time. After the end of a PUF pulse transmitted on a PUF target frequency, the
 16 mobile station shall disable the transmitter by the end of the first power control group of
 17 the PUF recovery time.

18 During a PUF pulse, the mobile station shall support power increases from the nominal up
 19 to the maximum output power. Immediately following the PUF pulse, the mobile station
 20 shall decrement its output power to the nominal power or to the gated-off power level with
 21 respect to the nominal output power.

22 The values for PUF_INIT_PWR_s and PUF_PWR_STEP_s are specified in the *Power Up Function*
 23 *Message* and are set when the mobile station processes the *Power Up Function Message*, as
 24 specified in 6.6.4.1.7.1. The value of CURRENT_PUF_PROBE_s is set during the processing
 25 of the *Power Up Function Message*. The total range of PUF_INIT_PWR_s is 0 to 63 dB. The
 26 total range of PUF_PWR_STEP_s is 0 to 31 dB. The total range of CURRENT_PUF_PROBE_s is
 27 1 to 16. The accuracy of the adjustment to the mean output power due to PUF_INIT_PWR_s
 28 + (CURRENT_PUF_PROBE_s × PUF_PWR_STEP_s) shall be $\pm 1/3$ of that value (in dB), or ± 3
 29 dB, whichever is greater, unless the resulting mean output power exceeds the mobile
 30 station's maximum output power. If the output power exceeds the mobile station's
 31 maximum output power, the mean output power shall be within 3 dB of the maximum
 32 output power. See Figure 6.1.2.3.1-1.

33



Where $X = \text{PUF_INIT_PWR}_S + (\text{CURRENT_PUF_PROBE}_S \times \text{PUF_PWR_STEPS})$

Figure 6.1.2.3.1-1. Power Up Function Transmission Envelope Mask

Prior to application of access probe corrections, closed loop power control corrections, and with INIT_PWR set to zero, the mobile station's estimated open loop mean output power should be within ± 6 dB and shall be within ± 9 dB of the value determined by the following relationship:

$$\begin{aligned} \text{mean output power (dBm)} = & - \text{mean input power (dBm)} \\ & + \text{offset power} \\ & + \text{interference correction from the last access probe} \\ & + \text{NOM_PWR} - 16 \times \text{NOM_PWR_EXT}. \end{aligned}$$

This requirement shall be met over the full range of NOM_PWR - 16 \times NOM_PWR_EXT (from -8 to +7 dB for Band Class 0 and -24 to +7 dB for Band Class 1).

6.1.2.3.2 Closed Loop Output Power

For closed loop correction on the Reverse Traffic Channel (with respect to the open loop estimate), the mobile station shall adjust its mean output power level in response to each valid power control bit (see 7.1.3.1.8) received on the Forward Fundamental Code Channel. A power control bit shall be considered valid if it is received in the second 1.25 ms time slot following a time slot in which the mobile station transmitted (see 7.1.3.1.8), except during a PUF probe. During a PUF probe, the mobile station shall consider a power control bit to be valid if it is received on the serving frequency in the second 1.25 ms time slot following a time slot in which the mobile station transmitted at the nominal power on the serving frequency. The mobile station shall consider a power control bit to be invalid if it is received in the second 1.25 ms time slot following a time slot in which the mobile station transmitter was gated off, changing power levels to increase power for the PUF pulse,

transmitting at the PUF pulse power level, or changing power levels to decrease power after the PUF pulse.

If the mobile station supports only Multiplex Option 1, only Multiplex Option 2, or only Multiplex Option 1 and Multiplex Option 2 on the Reverse Traffic Channel, then the mobile station may support any power control step size in Table 6.1.2.3.2-1 as its minimum power control step size. Otherwise, the mobile station shall support 0.5 dB or a smaller power control step size in Table 6.1.2.3.2-1 as its minimum power control step size. The mobile station shall also support all step sizes in Table 6.1.2.3.2-1 that are greater than its minimum supported power control step size. The nominal change in mean output power level per single power control bit shall be as specified in Table 6.1.2.3.2-1 corresponding to $PWR_CNTL_STEP_s$. The total changed closed loop mean output power shall be the accumulation of the level changes. The mobile station shall lock the accumulation of valid level changes and shall ignore received power control bits related to gated-off periods when the transmitter is disabled. The total changed closed loop mean output power shall be applied to the total transmit power for the mobile station.

Table 6.1.2.3.2-1. Closed Loop Power Control Step Size

| PWR_CNTL_STEP | Power Control Step Size (dB nominal) | Tolerance (dB) |
|----------------------|---|---------------------------|
| 0 | 1 | ±0.5 |
| 1 | 0.5 | ±0.3 |
| 2 | 0.25 | ±0.2 |

The change in mean output power per single power control bit shall be within the tolerance specified in Table 6.1.2.3.2-1 for the corresponding power control step size. For the 1.0 dB step size, the change in mean output power level per 10 valid power control bits of the same sign shall be within ±2.0 dB of 10 times (10 dB) the nominal change. For a 0.5 dB step size, the change in mean output power level per 20 valid power control bits of the same sign shall be within ±2.5 dB of 20 times (10 dB) the nominal change. For a 0.25 dB step size, the change in mean output power level per 40 valid power control bits of the same sign shall be within ±3.0 dB of 40 times (10 dB) the nominal change. A '0' power control bit implies an increase in transmit power; a '1' power control bit implies a decrease in transmit power.

The mobile station shall provide a closed loop adjustment range greater than ±24 dB around its open loop estimate. If the mobile station is unable to transmit at the requested output power, the mobile station shall terminate transmission on at least one active Reverse Supplemental Code Channel not later than the transmission of the next 20 ms frame to maintain the requested output power on the Fundamental Code Channel.

See 6.6.6.2.7.2 for combining power control bits received from different multipath components or from different base stations during handoff.

6.1.2.4 Power Transition Characteristics

6.1.2.4.1 Open Loop Estimation

A mobile station operating in Band Class 1 shall use the open loop estimation equations in this Standard, in lieu of the values stated in ANSI J-STD-018.

Following a step change in mean input power, ΔP_{in} , the mean output power of the mobile station shall transition to its final value in a direction opposite in sign to ΔP_{in} , with magnitude contained between mask limits defined by:

(a) upper limit:

for $0 < t < 24$ ms: $\max [1.2 \times |\Delta P_{in}| \times (t/24), |\Delta P_{in}| \times (t/24) + 2.0 \text{ dB}] + 1.5 \text{ dB},^2$

for $t \geq 24$ ms: $\max [1.2 \times |\Delta P_{in}|, |\Delta P_{in}| + 0.5 \text{ dB}] + 1.5 \text{ dB};$

(b) lower limit:

for $t > 0$: $\max [0.8 \times |\Delta P_{in}| \times [1 - e^{(1.25 - t)/36}] - 2.0 \text{ dB}, 0] - 1 \text{ dB};$

where t is expressed in units of milliseconds, ΔP_{in} is expressed in units of dB, and $\max [x, y]$ is the maximum of x and y . These limits shall apply for a step change ΔP_{in} of ± 20 dB or less. The absolute value of the change in mean output power due to open loop power control shall be a monotonically increasing function of time. If the change in mean output power consists of discrete increments, no single increment shall exceed 1.2 dB. See 6.1.2.3 for the valid range of the mobile station's mean output power.

6.1.2.4.2 Closed Loop Correction

Following the reception of a valid closed loop power control bit, the mean output power of the mobile station shall be within 0.3 dB of the final value in less than 500 μ s for the 1.0 dB step size. For power control step sizes of 0.5 dB and 0.25 dB, the mean output power of the mobile station should be within 0.15 and 0.1 dB respectively, of the final value in less than 500 μ s.

6.1.3 Modulation Characteristics

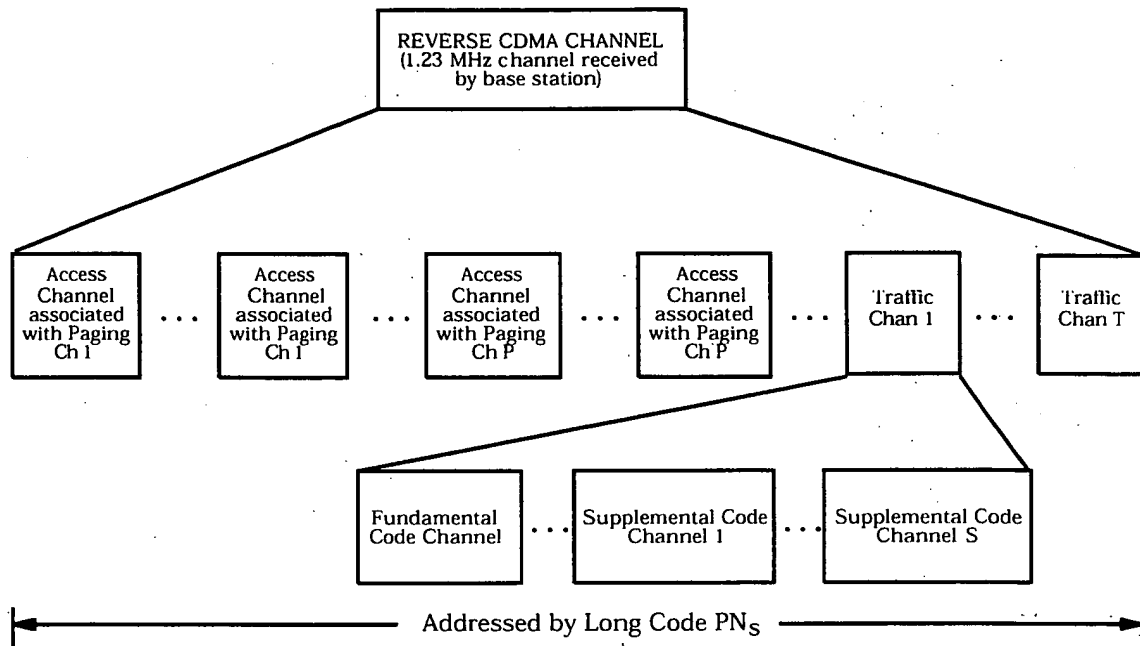
6.1.3.1 Reverse CDMA Channel Signals

The Reverse CDMA Channel is composed of Access Channels and Reverse Traffic Channels. A Reverse Traffic Channel is further subdivided into a single Fundamental Code Channel and zero through seven Supplemental Code Channels. These channels shall share the same CDMA frequency assignment using direct-sequence CDMA techniques. Figure 6.1.3.1-1 shows an example of all of the signals received by a base station on the Reverse CDMA Channel. Each Code Channel of a Reverse Traffic Channel is identified by a distinct user long code sequence; each Access Channel is identified by a distinct Access Channel long code sequence. Multiple Reverse CDMA Channels may be used by a base station in a frequency division multiplexed manner.

² The mask limits allow for the effect of alternating closed loop power control bits.

- 1 The Reverse CDMA Channel has the overall structure shown in Figures 6.1.3.1-2 through
 2 6.1.3.1-7. Data transmitted on the Reverse CDMA Channel is grouped into 20 ms frames.
 3 All data transmitted on the Reverse CDMA Channel is convolutionally encoded, block
 4 interleaved, modulated by the 64-ary orthogonal modulation, and direct-sequence spread
 5 prior to transmission.

6



7

8

9

Figure 6.1.3.1-1. Example of Logical Reverse CDMA Channels Received at a Base Station

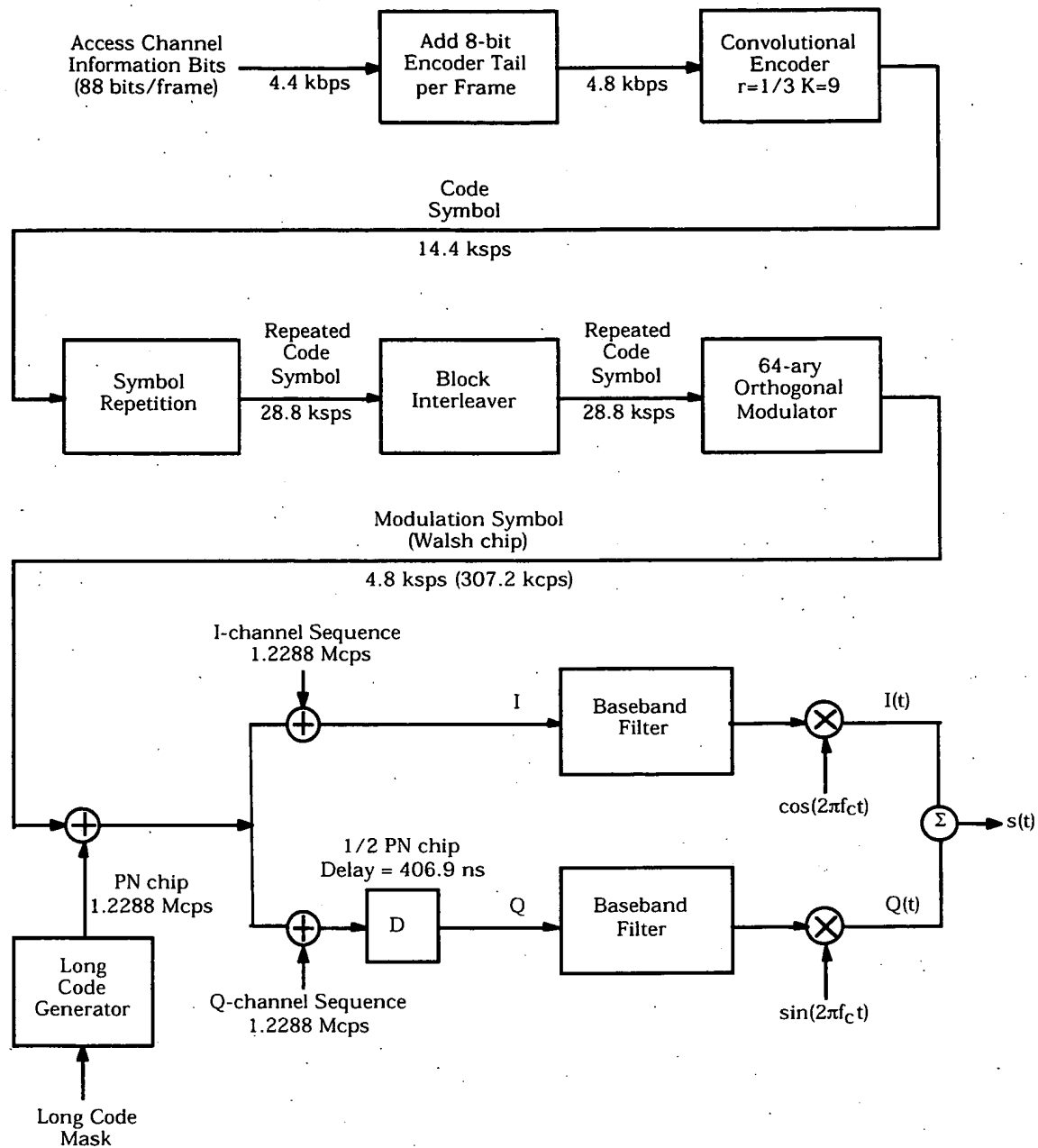


Figure 6.1.3.1-2. Reverse CDMA Channel Structure for the Access Channel

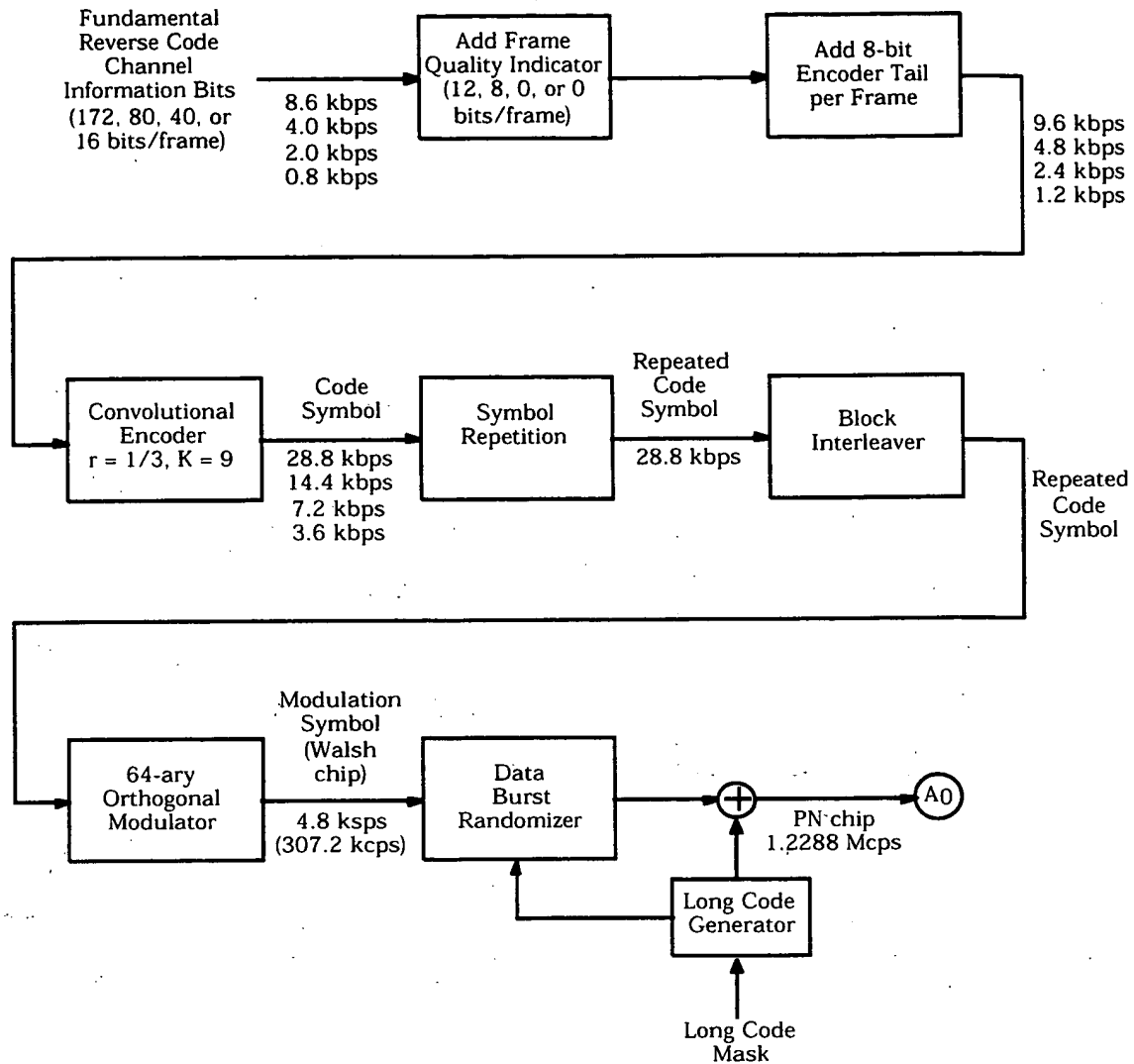


Figure 6.1.3.1-3. Reverse CDMA Channel Structure for Fundamental Code Channels with Rate Set 1

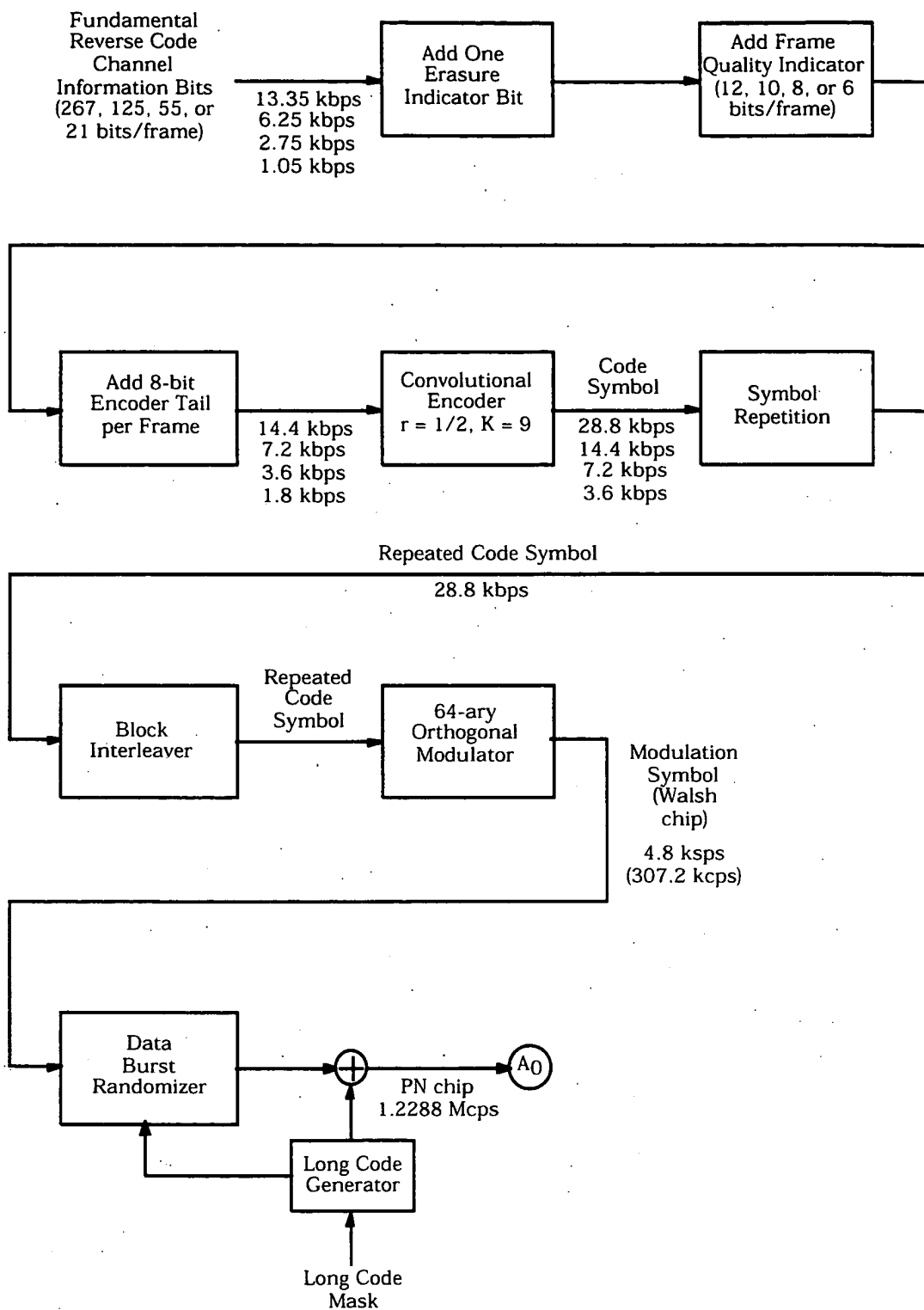


Figure 6.1.3.1-4. Reverse CDMA Channel Structure for Fundamental Code Channels with Rate Set 2

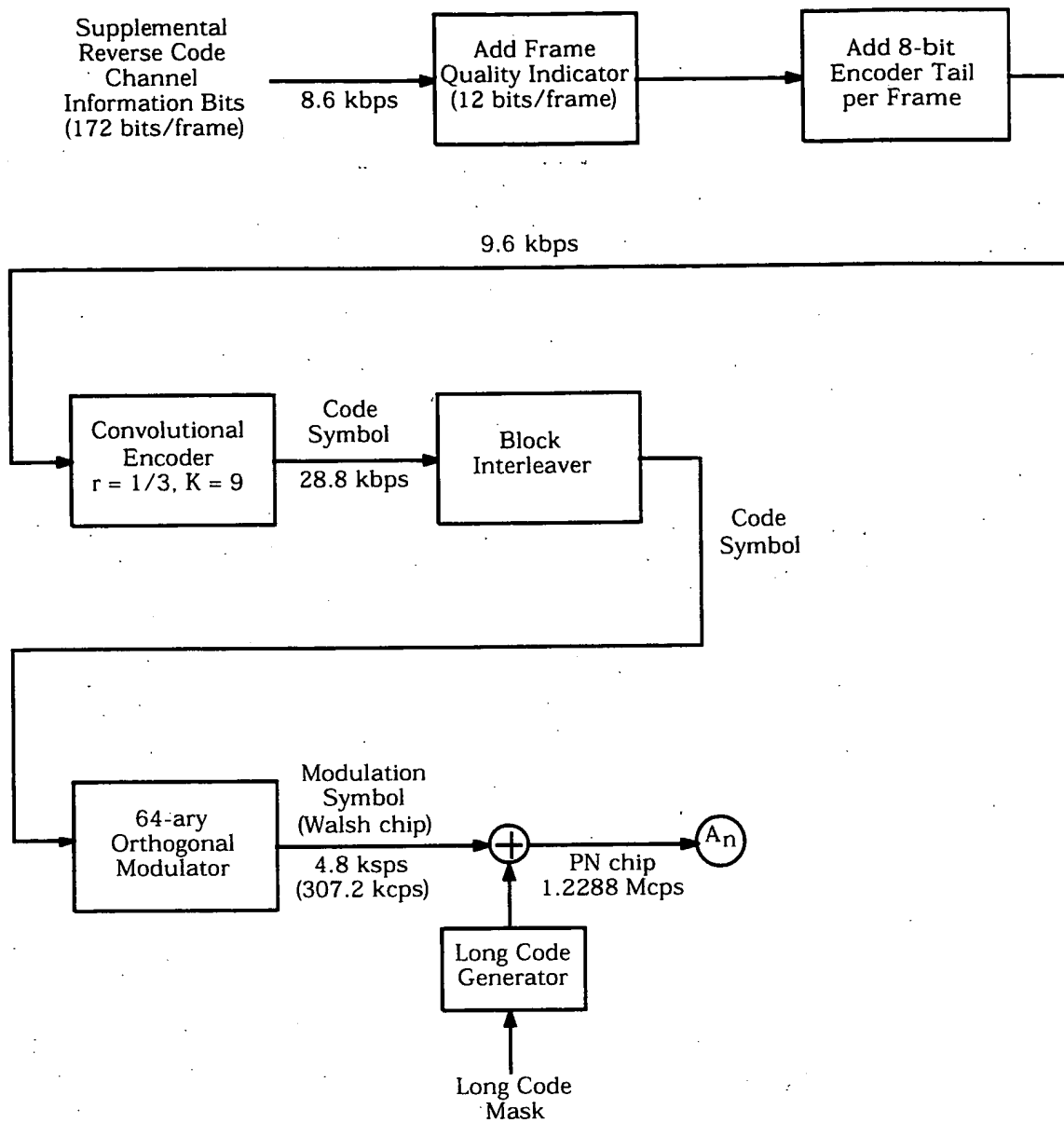


Figure 6.1.3.1-5. Reverse CDMA Channel Structure for Supplemental Code Channels with Rate Set 1

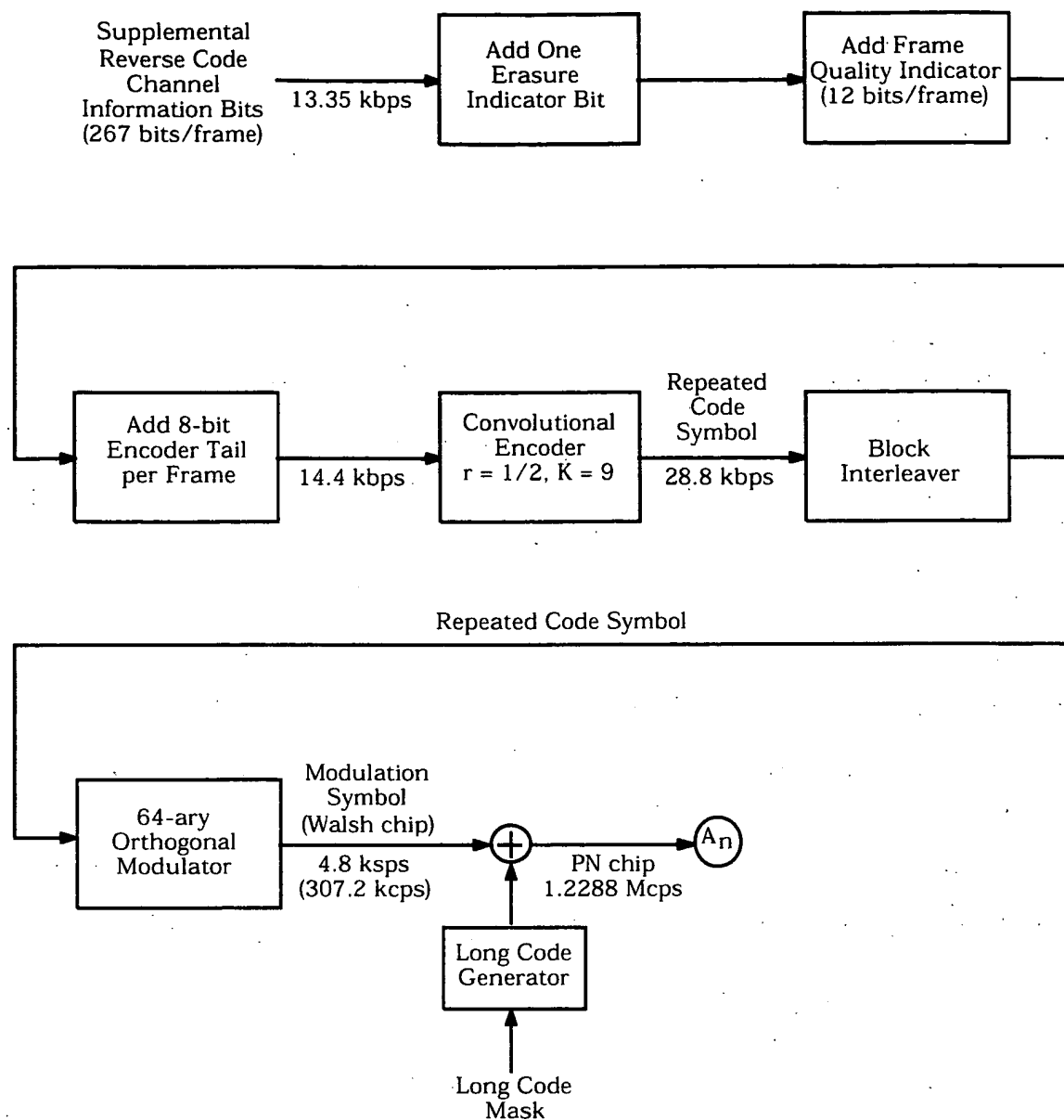


Figure 6.1.3.1-6. Reverse CDMA Channel Structure for Supplemental Code Channels with Rate Set 2

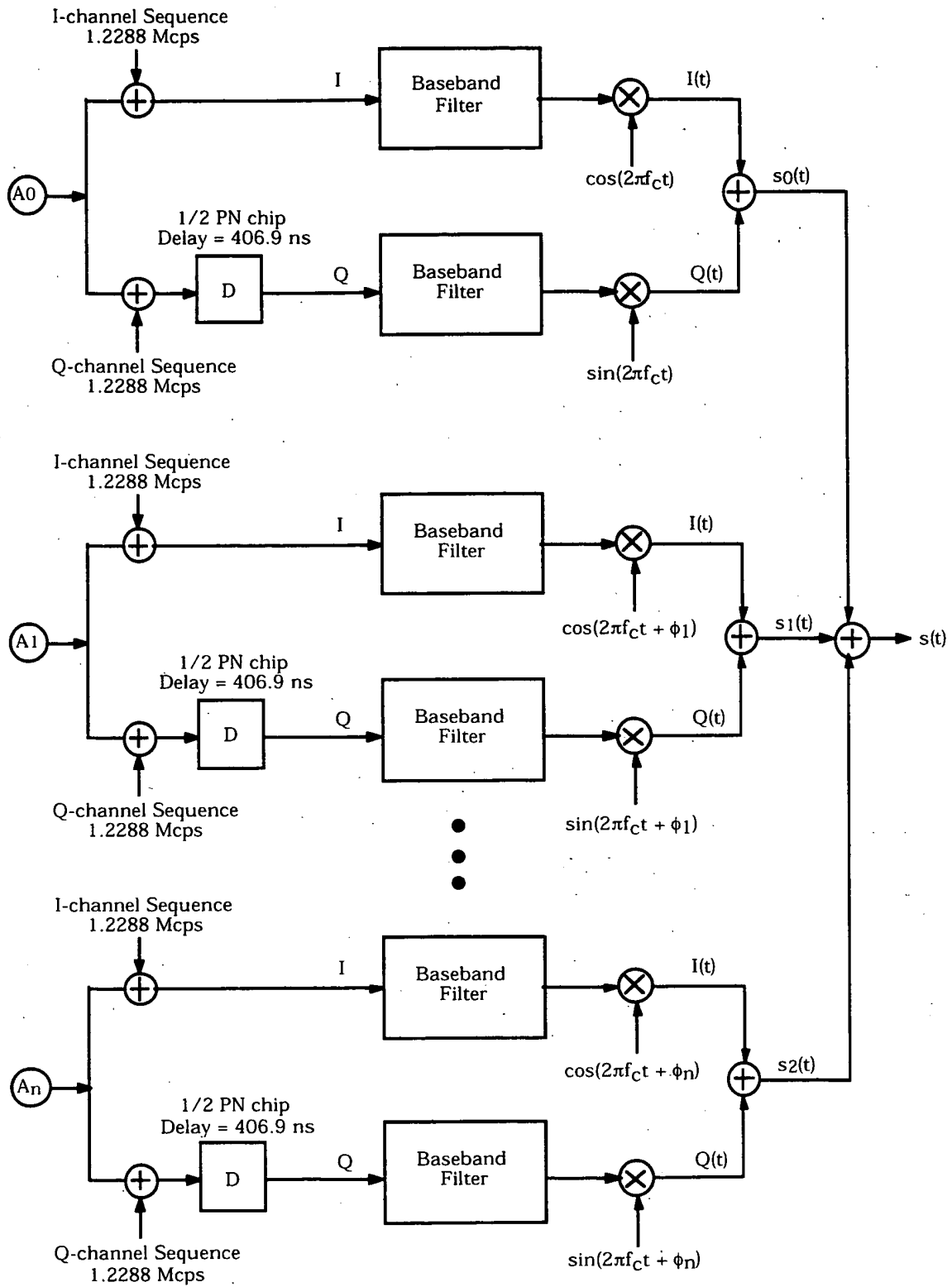


Figure 6.1.3.1-7. Reverse Traffic Channel Structure Including Fundamental Code Channel and Multiple Supplemental Code Channels with Rate Set 1 and Rate Set 2

1 After adding the frame quality indicator and Encoder Tail Bits as shown in Figures 6.1.3.1-
2 2 through 6.1.3.1-4, the data frames may be transmitted on the Reverse Traffic Code
3 Channel(s) at data rates of 9600, 4800, 2400, or 1200 bps for Rate Set 1 or at rates of
4 14400, 7200, 3600, or 1800 bps for Rate Set 2.

5 The Fundamental Code Channel of the Reverse Traffic Channel may use any data rate in its
6 rate set. The transmission duty cycle on the Fundamental Code Channel of the Reverse
7 Traffic Channel varies with the transmission data rate.

8 Specifically, the transmission duty cycle for 14400 and 9600 bps frames is 100 percent, the
9 transmission duty cycle for 7200 and 4800 bps frames is 50 percent, the transmission duty
10 cycle for 3600 and 2400 bps frames is 25 percent, and the transmission duty cycle for 1800
11 and 1200 bps frames is 12.5 percent as shown in Tables 6.1.3.1.1-1 and 6.1.3.1.1-2. Since
12 the duty cycle for transmission varies proportionately with the data rate, the actual burst
13 transmission rate is fixed at 28,800 code symbols per second.

14 Since six code symbols are modulated as one of 64 modulation symbols for transmission,
15 the modulation symbol transmission rate is fixed at 4800 modulation symbols per second.
16 This results in a fixed Walsh chip rate of 307.2 kcps. The rate of the spreading PN
17 sequence is fixed at 1.2288 Mcps, so that each Walsh chip is spread by four PN chips.
18 Tables 6.1.3.1.1-1 and 6.1.3.1.1-2 define the signal rates for the various transmission rates
19 on the Reverse Traffic Channel.

20 The numerology is similar for the Access Channel except that the transmission rate is fixed
21 at 4800 bps after adding eight Encoder Tail Bits (see 6.1.3.2.2). Each code symbol is
22 repeated once, and the transmission duty cycle is 100 percent. Table 6.1.3.1.1-3 defines
23 the signal rates on the Access Channel.

24 6.1.3.1.1 Modulation Parameters

25 The modulation parameters for the Code Channels in the Reverse Traffic Channel are
26 shown in Tables 6.1.3.1.1-1 and 6.1.3.1.1-2. Note that only the full rate (9600 bps for Rate
27 Set 1 and 14400 bps for Rate Set 2) are permitted on Supplemental Code Channels. The
28 modulation parameters for the Access Channel are shown in Table 6.1.3.1.1-3.

Table 6.1.3.1.1-1. Reverse Traffic Channel Modulation Parameters for Rate Set 1

| Parameter | Data Rate (bps) | | | | Units |
|--|-----------------|--------|--------|--------|---|
| | 9600 | 4800* | 2400* | 1200* | |
| PN Chip Rate | 1.2288 | 1.2288 | 1.2288 | 1.2288 | Mcps |
| Code Rate | 1/3 | 1/3 | 1/3 | 1/3 | bits/code symbol |
| Transmit Duty Cycle | 100.0 | 50.0 | 25.0 | 12.5 | % |
| Code Symbol Repetition | 1 | 2 | 4 | 8 | repeated code symbols/code symbol |
| Repeated Code Symbol Rate | 28,800 | 28,800 | 28,800 | 28,800 | sps |
| Modulation | 6 | 6 | 6 | 6 | repeated code symbols/modulation symbol |
| Modulation Symbol Rate | 4800 | 4800 | 4800 | 4800 | sps |
| Walsh Chip Rate | 307.20 | 307.20 | 307.20 | 307.20 | kcps |
| Modulation Symbol Duration | 208.33 | 208.33 | 208.33 | 208.33 | μs |
| PN Chips/Repeated Code Symbol | 42.67 | 42.67 | 42.67 | 42.67 | PN chips/repeated code symbol |
| PN Chips/Modulation Symbol | 256 | 256 | 256 | 256 | PN chips/modulation symbol |
| PN Chips/Walsh Chip | 4 | 4 | 4 | 4 | PN chips/Walsh chip |
| * Applicable to the Fundamental Code Channel only. | | | | | |

Table 6.1.3.1.1-2. Reverse Traffic Channel Modulation Parameters for Rate Set 2

| Parameter | Data Rate (bps) | | | | Units |
|--|-----------------|--------|--------|--------|---|
| | 14400 | 7200* | 3600* | 1800* | |
| PN Chip Rate | 1.2288 | 1.2288 | 1.2288 | 1.2288 | Mcps |
| Code Rate | 1/2 | 1/2 | 1/2 | 1/2 | bits/code symbol |
| Transmit Duty Cycle | 100.0 | 50.0 | 25.0 | 12.5 | % |
| Code Symbol Repetition | 1 | 2 | 4 | 8 | repeated code symbols/code symbol |
| Repeated Code Symbol Rate | 28,800 | 28,800 | 28,800 | 28,800 | sps |
| Modulation | 6 | 6 | 6 | 6 | repeated code symbols/modulation symbol |
| Modulation Symbol Rate | 4800 | 4800 | 4800 | 4800 | sps |
| Walsh Chip Rate | 307.20 | 307.20 | 307.20 | 307.20 | kcps |
| Modulation Symbol Duration | 208.33 | 208.33 | 208.33 | 208.33 | μs |
| PN Chips/Repeated Code Symbol | 42.67 | 42.67 | 42.67 | 42.67 | PN chips/repeated code symbol |
| PN Chips/Modulation Symbol | 256 | 256 | 256 | 256 | PN chips/modulation symbol |
| PN Chips/Walsh Chip | 4 | 4 | 4 | 4 | PN chips/Walsh chip |
| * Applicable to the Fundamental Code Channel only. | | | | | |

Table 6.1.3.1.1-3. Access Channel Modulation Parameters

| | Data Rate (bps) | |
|-------------------------------|------------------------|---|
| Parameter | 4800 | Units |
| PN Chip Rate | 1.2288 | Mcps |
| Code Rate | 1/3 | bits/code symbol |
| Code Symbol Repetition | 2 | repeated code symbols/code symbol |
| Transmit Duty Cycle | 100.0 | % |
| Repeated Code Symbol Rate | 28,800 | sps |
| Modulation | 6 | repeated code symbols/modulation symbol |
| Modulation Symbol Rate | 4800 | sps |
| Walsh Chip Rate | 307.20 | kcps |
| Modulation Symbol Duration | 208.33 | μs |
| PN Chips/Repeated Code Symbol | 42.67 | PN chips/repeated code symbol |
| PN Chips/Modulation Symbol | 256 | PN chips/modulation symbol |
| PN Chips/Walsh Chip | 4 | PN chips/Walsh chip |

6.1.3.1.2 Data Rates

The Access Channel shall support fixed data rate operation at 4800 bps.

The Reverse Traffic Channels data rates are grouped into sets called rate sets. Rate Set 1 contains four elements, specifically 9600, 4800, 2400, and 1200 bps. Only full rate (9600 bps) may be utilized on Rate Set 1 Supplemental Code Channels. Rate Set 2 contains four elements, specifically 14400, 7200, 3600, and 1800 bps. Only full rate (14400 bps) may be utilized on Rate Set 2 Supplemental Code Channels.

The mobile station shall support Rate Set 1 on the Reverse Traffic Channel. The mobile station may support Rate Set 2 on the Reverse Traffic Channel. The mobile station shall support variable data rate operation with all four elements of each supported rate set.

The mobile station shall always support the Fundamental Code Channel for any supported rate set. The mobile station may support Supplemental Code Channels for any supported rate set. Support for Supplemental Code Channels is determined via multiplex option negotiation (see 6.1.3.3.13 and 6.1.3.3.14).

6.1.3.1.3 Convolutional Encoding

The mobile station shall convolutionally encode the data transmitted on the code channels of the Reverse Traffic Channel and on the Access Channel prior to interleaving. The convolutional code shall have a constraint length of 9. For the Access Channel and Rate Set 1 of the Reverse Traffic Channel code channels, the convolutional code rate shall be 1/3. For Rate Set 2 of the Reverse Traffic Channel code channels, the convolutional code rate shall be 1/2.

Convolutional encoding involves the modulo-2 addition of selected taps of a serially time-delayed data sequence. The length of the data sequence delay is equal to $K-1$, where K is the constraint length of the code.

6.1.3.1.3.1 Rate 1/3 Convolutional Code

The generator functions for this code shall be g_0 equals 557 (octal), g_1 equals 663 (octal), and g_2 equals 711 (octal). This code generates three code symbols for each data bit input to the encoder. These code symbols shall be output so that the code symbol (c_0) encoded with generator function g_0 shall be output first, the code symbol (c_1) encoded with generator function g_1 shall be output second, and the code symbol (c_2) encoded with generator function g_2 shall be output last. The state of the convolutional encoder, upon initialization, shall be the all-zero state. The first code symbol output after initialization shall be a code symbol encoded with generator function g_0 . The encoder for this code is illustrated in Figure 6.1.3.1.3.1-1.

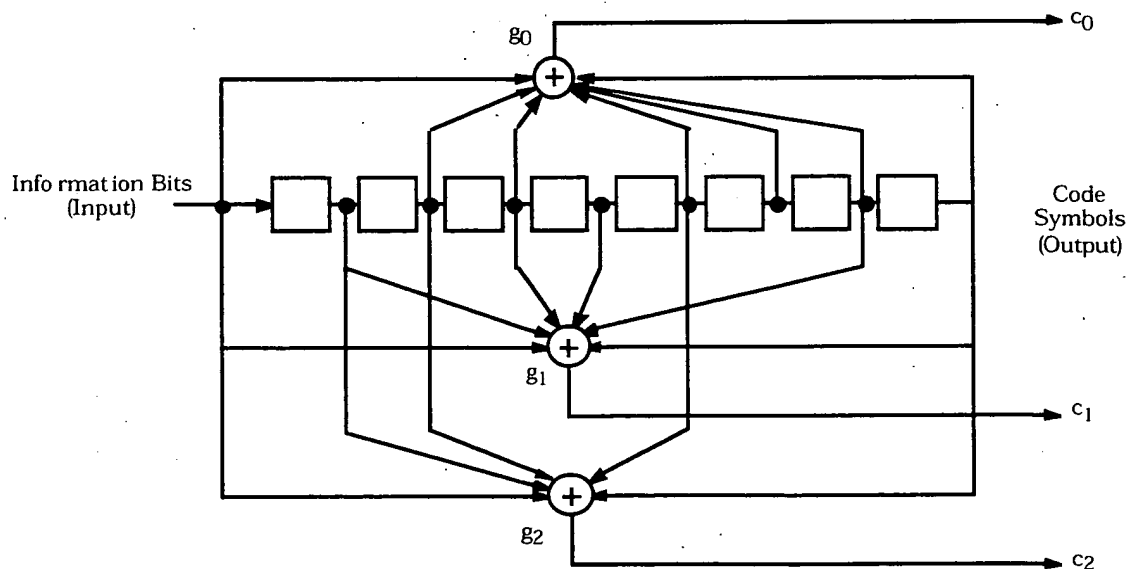


Figure 6.1.3.1.3.1-1. $K = 9$, Rate 1/3 Convolutional Encoder

6.1.3.1.3.2 Rate 1/2 Convolutional Code

The generator functions for this code shall be g_0 equals 753 (octal) and g_1 equals 561 (octal). This code generates two code symbols for each data bit input to the encoder. These code symbols shall be output so that the code symbol (c_0) encoded with generator function g_0 shall be output first and the code symbol (c_1) encoded with generator function g_1 shall be output last. The state of the convolutional encoder, upon initialization, shall be the all-zero state. The first code symbol output after initialization shall be a code symbol encoded with generator function g_0 . The encoder for this code is illustrated in Figure 6.1.3.1.3.2-1.

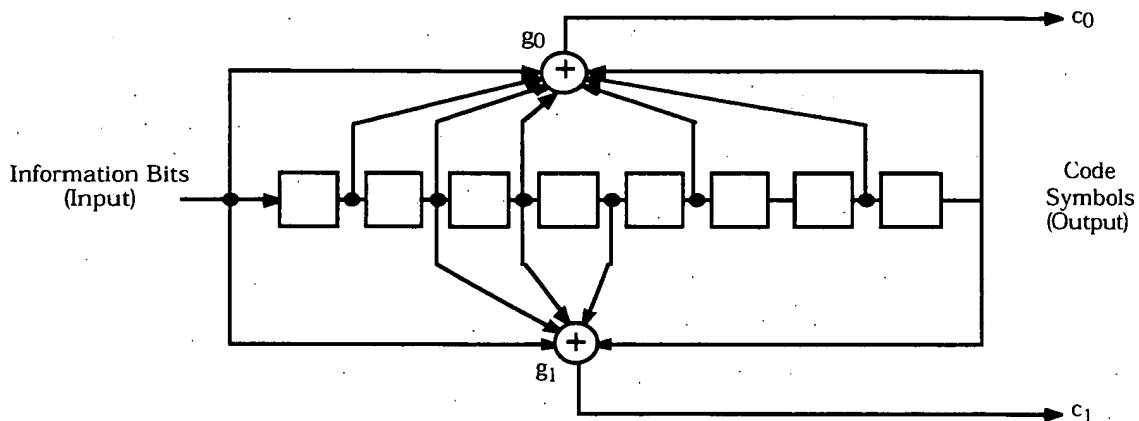


Figure 6.1.3.1.3.2-1. K = 9, Rate 1/2 Convolutional Encoder

6.1.3.1.4 Code Symbol Repetition

Code symbols output from the convolutional encoder are repeated before being interleaved when the data rate is lower than 9600 bps for Rate Set 1 and 14400 bps for Rate Set 2.

Code symbol repetition on the code channels of the Reverse Traffic Channel is only used as an expedient method for describing the operation of the block interleaver specified in 6.1.3.1.5 and the data burst randomizer specified in 6.1.3.1.7.2. Implementations other than code symbol repetition that achieve the same result are allowed.

The code symbol repetition rate on the code channels of the Reverse Traffic Channel varies with data rate. Code symbols shall not be repeated for the 14400 and 9600 bps data rates. Each code symbol at the 7200 and 4800 bps data rates shall be repeated 1 time (each symbol occurs two consecutive times). Each code symbol at the 3600 and 2400 bps data rates shall be repeated three times (each symbol occurs four consecutive times). Each code symbol at the 1800 and 1200 bps data rates shall be repeated seven times (each symbol occurs eight consecutive times). For all of the data rates, this results in a constant repeated code symbol rate of 28800 code symbols per second. On the code channels of the Reverse Traffic Channel these repeated code symbols shall not be transmitted multiple times. Rather, the repeated code symbols shall be input to the block interleaver function,

and all but one of the code symbol repetitions shall be deleted prior to actual transmission due to the variable transmission duty cycle.

For the Access Channel, which has a fixed data rate of 4800 bps, each code symbol shall be repeated 1 time (each symbol occurs 2 consecutive times). On the Access Channel, both repeated code symbols shall be transmitted.

6.1.3.1.5 Block Interleaving

The mobile station shall interleave all repeated code symbols on the code channels of the Reverse Traffic Channel and on the Access Channel prior to modulation and transmission. A block interleaver spanning 20 ms shall be used. The interleaver shall be an array with 32 rows and 18 columns (i.e., 576 cells). Repeated code symbols shall be written into the interleaver by columns filling the complete 32×18 matrix. Tables 6.1.3.1.5-1 through 6.1.3.1.5-4 illustrate the ordering of write operations of code symbols into the interleaver array for the four transmission data rates of each rate set.

Reverse Traffic Channel repeated code symbols shall be output from the interleaver by rows. For Rate Set 1, the interleaver rows from the leftmost to the rightmost column shall be output in the following order:

At 9600 bps:

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32

At 4800 bps:

1 3 2 4 5 7 6 8 9 11 10 12 13 15 14 16 17 19 18 20 21 23 22 24 25 27 26 28 29 31 30 32

At 2400 bps:

1 5 2 6 3 7 4 8 9 13 10 14 11 15 12 16 17 21 18 22 19 23 20 24 25 29 26 30 27 31 28 32

At 1200 bps:

1 9 2 10 3 11 4 12 5 13 6 14 7 15 8 16 17 25 18 26 19 27 20 28 21 29 22 30 23 31 24 32

For Rate Set 2, the interleaver rows shall be output in the following order:

At 14400 bps:

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32

At 7200 bps:

1 3 2 4 5 7 6 8 9 11 10 12 13 15 14 16 17 19 18 20 21 23 22 24 25 27 26 28 29 31 30 32

At 3600 bps:

1 5 2 6 3 7 4 8 9 13 10 14 11 15 12 16 17 21 18 22 19 23 20 24 25 29 26 30 27 31 28 32

At 1800 bps:

1 9 2 10 3 11 4 12 5 13 6 14 7 15 8 16 17 25 18 26 19 27 20 28 21 29 22 30 23 31 24 32

Access Channel repeated code symbols shall be output from the interleaver by rows. The interleaver rows shall be output in the following order:³

1 17 9 25 5 21 13 29 3 19 11 27 7 23 15 31 2 18 10 26 6 22 14 30 4 20 12 28 8 24 16 32

Table 6.1.3.1.5-1. Reverse Traffic Channel Interleaver Memory (Write Operation) for 9600 and 14400 bps

| | | | | | | | | | | | | | | | | | |
|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 1 | 33 | 65 | 97 | 129 | 161 | 193 | 225 | 257 | 289 | 321 | 353 | 385 | 417 | 449 | 481 | 513 | 545 |
| 2 | 34 | 66 | 98 | 130 | 162 | 194 | 226 | 258 | 290 | 322 | 354 | 386 | 418 | 450 | 482 | 514 | 546 |
| 3 | 35 | 67 | 99 | 131 | 163 | 195 | 227 | 259 | 291 | 323 | 355 | 387 | 419 | 451 | 483 | 515 | 547 |
| 4 | 36 | 68 | 100 | 132 | 164 | 196 | 228 | 260 | 292 | 324 | 356 | 388 | 420 | 452 | 484 | 516 | 548 |
| 5 | 37 | 69 | 101 | 133 | 165 | 197 | 229 | 261 | 293 | 325 | 357 | 389 | 421 | 453 | 485 | 517 | 549 |
| 6 | 38 | 70 | 102 | 134 | 166 | 198 | 230 | 262 | 294 | 326 | 358 | 390 | 422 | 454 | 486 | 518 | 550 |
| 7 | 39 | 71 | 103 | 135 | 167 | 199 | 231 | 263 | 295 | 327 | 359 | 391 | 423 | 455 | 487 | 519 | 551 |
| 8 | 40 | 72 | 104 | 136 | 168 | 200 | 232 | 264 | 296 | 328 | 360 | 392 | 424 | 456 | 488 | 520 | 552 |
| 9 | 41 | 73 | 105 | 137 | 169 | 201 | 233 | 265 | 297 | 329 | 361 | 393 | 425 | 457 | 489 | 521 | 553 |
| 10 | 42 | 74 | 106 | 138 | 170 | 202 | 234 | 266 | 298 | 330 | 362 | 394 | 426 | 458 | 490 | 522 | 554 |
| 11 | 43 | 75 | 107 | 139 | 171 | 203 | 235 | 267 | 299 | 331 | 363 | 395 | 427 | 459 | 491 | 523 | 555 |
| 12 | 44 | 76 | 108 | 140 | 172 | 204 | 236 | 268 | 300 | 332 | 364 | 396 | 428 | 460 | 492 | 524 | 556 |
| 13 | 45 | 77 | 109 | 141 | 173 | 205 | 237 | 269 | 301 | 333 | 365 | 397 | 429 | 461 | 493 | 525 | 557 |
| 14 | 46 | 78 | 110 | 142 | 174 | 206 | 238 | 270 | 302 | 334 | 366 | 398 | 430 | 462 | 494 | 526 | 558 |
| 15 | 47 | 79 | 111 | 143 | 175 | 207 | 239 | 271 | 303 | 335 | 367 | 399 | 431 | 463 | 495 | 527 | 559 |
| 16 | 48 | 80 | 112 | 144 | 176 | 208 | 240 | 272 | 304 | 336 | 368 | 400 | 432 | 464 | 496 | 528 | 560 |
| 17 | 49 | 81 | 113 | 145 | 177 | 209 | 241 | 273 | 305 | 337 | 369 | 401 | 433 | 465 | 497 | 529 | 561 |
| 18 | 50 | 82 | 114 | 146 | 178 | 210 | 242 | 274 | 306 | 338 | 370 | 402 | 434 | 466 | 498 | 530 | 562 |
| 19 | 51 | 83 | 115 | 147 | 179 | 211 | 243 | 275 | 307 | 339 | 371 | 403 | 435 | 467 | 499 | 531 | 563 |
| 20 | 52 | 84 | 116 | 148 | 180 | 212 | 244 | 276 | 308 | 340 | 372 | 404 | 436 | 468 | 500 | 532 | 564 |
| 21 | 53 | 85 | 117 | 149 | 181 | 213 | 245 | 277 | 309 | 341 | 373 | 405 | 437 | 469 | 501 | 533 | 565 |
| 22 | 54 | 86 | 118 | 150 | 182 | 214 | 246 | 278 | 310 | 342 | 374 | 406 | 438 | 470 | 502 | 534 | 566 |
| 23 | 55 | 87 | 119 | 151 | 183 | 215 | 247 | 279 | 311 | 343 | 375 | 407 | 439 | 471 | 503 | 535 | 567 |
| 24 | 56 | 88 | 120 | 152 | 184 | 216 | 248 | 280 | 312 | 344 | 376 | 408 | 440 | 472 | 504 | 536 | 568 |
| 25 | 57 | 89 | 121 | 153 | 185 | 217 | 249 | 281 | 313 | 345 | 377 | 409 | 441 | 473 | 505 | 537 | 569 |
| 26 | 58 | 90 | 122 | 154 | 186 | 218 | 250 | 282 | 314 | 346 | 378 | 410 | 442 | 474 | 506 | 538 | 570 |
| 27 | 59 | 91 | 123 | 155 | 187 | 219 | 251 | 283 | 315 | 347 | 379 | 411 | 443 | 475 | 507 | 539 | 571 |
| 28 | 60 | 92 | 124 | 156 | 188 | 220 | 252 | 284 | 316 | 348 | 380 | 412 | 444 | 476 | 508 | 540 | 572 |
| 29 | 61 | 93 | 125 | 157 | 189 | 221 | 253 | 285 | 317 | 349 | 381 | 413 | 445 | 477 | 509 | 541 | 573 |
| 30 | 62 | 94 | 126 | 158 | 190 | 222 | 254 | 286 | 318 | 350 | 382 | 414 | 446 | 478 | 510 | 542 | 574 |
| 31 | 63 | 95 | 127 | 159 | 191 | 223 | 255 | 287 | 319 | 351 | 383 | 415 | 447 | 479 | 511 | 543 | 575 |
| 32 | 64 | 96 | 128 | 160 | 192 | 224 | 256 | 288 | 320 | 352 | 384 | 416 | 448 | 480 | 512 | 544 | 576 |

³ This is a bit-reversed readout of the row addresses. If there is a binary counter $c_4c_3c_2c_1c_0$, counting from 0 through 31, and n is a 5-bit binary number, $n = a_4a_3a_2a_1a_0$, where $a_4 = c_0$, $a_3 = c_1$, $a_2 = c_2$, $a_1 = c_3$, $a_0 = c_4$, then the row address is given by $n+1$.

**Table 6.1.3.1.5-2. Reverse Traffic Channel for 4800 and 7200 bps or Access Channel
for 4800 bps Interleaver Memory (Write Operation)**

| | | | | | | | | | | | | | | | | | |
|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 1 | 17 | 33 | 49 | 65 | 81 | 97 | 113 | 129 | 145 | 161 | 177 | 193 | 209 | 225 | 241 | 257 | 273 |
| 1 | 17 | 33 | 49 | 65 | 81 | 97 | 113 | 129 | 145 | 161 | 177 | 193 | 209 | 225 | 241 | 257 | 273 |
| 2 | 18 | 34 | 50 | 66 | 82 | 98 | 114 | 130 | 146 | 162 | 178 | 194 | 210 | 226 | 242 | 258 | 274 |
| 2 | 18 | 34 | 50 | 66 | 82 | 98 | 114 | 130 | 146 | 162 | 178 | 194 | 210 | 226 | 242 | 258 | 274 |
| 3 | 19 | 35 | 51 | 67 | 83 | 99 | 115 | 131 | 147 | 163 | 179 | 195 | 211 | 227 | 243 | 259 | 275 |
| 3 | 19 | 35 | 51 | 67 | 83 | 99 | 115 | 131 | 147 | 163 | 179 | 195 | 211 | 227 | 243 | 259 | 275 |
| 4 | 20 | 36 | 52 | 68 | 84 | 100 | 116 | 132 | 148 | 164 | 180 | 196 | 212 | 228 | 244 | 260 | 276 |
| 4 | 20 | 36 | 52 | 68 | 84 | 100 | 116 | 132 | 148 | 164 | 180 | 196 | 212 | 228 | 244 | 260 | 276 |
| 5 | 21 | 37 | 53 | 69 | 85 | 101 | 117 | 133 | 149 | 165 | 181 | 197 | 213 | 229 | 245 | 261 | 277 |
| 5 | 21 | 37 | 53 | 69 | 85 | 101 | 117 | 133 | 149 | 165 | 181 | 197 | 213 | 229 | 245 | 261 | 277 |
| 6 | 22 | 38 | 54 | 70 | 86 | 102 | 118 | 134 | 150 | 166 | 182 | 198 | 214 | 230 | 246 | 262 | 278 |
| 6 | 22 | 38 | 54 | 70 | 86 | 102 | 118 | 134 | 150 | 166 | 182 | 198 | 214 | 230 | 246 | 262 | 278 |
| 7 | 23 | 39 | 55 | 71 | 87 | 103 | 119 | 135 | 151 | 167 | 183 | 199 | 215 | 231 | 247 | 263 | 279 |
| 7 | 23 | 39 | 55 | 71 | 87 | 103 | 119 | 135 | 151 | 167 | 183 | 199 | 215 | 231 | 247 | 263 | 279 |
| 8 | 24 | 40 | 56 | 72 | 88 | 104 | 120 | 136 | 152 | 168 | 184 | 200 | 216 | 232 | 248 | 264 | 280 |
| 8 | 24 | 40 | 56 | 72 | 88 | 104 | 120 | 136 | 152 | 168 | 184 | 200 | 216 | 232 | 248 | 264 | 280 |
| 9 | 25 | 41 | 57 | 73 | 89 | 105 | 121 | 137 | 153 | 169 | 185 | 201 | 217 | 233 | 249 | 265 | 281 |
| 9 | 25 | 41 | 57 | 73 | 89 | 105 | 121 | 137 | 153 | 169 | 185 | 201 | 217 | 233 | 249 | 265 | 281 |
| 10 | 26 | 42 | 58 | 74 | 90 | 106 | 122 | 138 | 154 | 170 | 186 | 202 | 218 | 234 | 250 | 266 | 282 |
| 10 | 26 | 42 | 58 | 74 | 90 | 106 | 122 | 138 | 154 | 170 | 186 | 202 | 218 | 234 | 250 | 266 | 282 |
| 11 | 27 | 43 | 59 | 75 | 91 | 107 | 123 | 139 | 155 | 171 | 187 | 203 | 219 | 235 | 251 | 267 | 283 |
| 11 | 27 | 43 | 59 | 75 | 91 | 107 | 123 | 139 | 155 | 171 | 187 | 203 | 219 | 235 | 251 | 267 | 283 |
| 12 | 28 | 44 | 60 | 76 | 92 | 108 | 124 | 140 | 156 | 172 | 188 | 204 | 220 | 236 | 252 | 268 | 284 |
| 12 | 28 | 44 | 60 | 76 | 92 | 108 | 124 | 140 | 156 | 172 | 188 | 204 | 220 | 236 | 252 | 268 | 284 |
| 13 | 29 | 45 | 61 | 77 | 93 | 109 | 125 | 141 | 157 | 173 | 189 | 205 | 221 | 237 | 253 | 269 | 285 |
| 13 | 29 | 45 | 61 | 77 | 93 | 109 | 125 | 141 | 157 | 173 | 189 | 205 | 221 | 237 | 253 | 269 | 285 |
| 14 | 30 | 46 | 62 | 78 | 94 | 110 | 126 | 142 | 158 | 174 | 190 | 206 | 222 | 238 | 254 | 270 | 286 |
| 14 | 30 | 46 | 62 | 78 | 94 | 110 | 126 | 142 | 158 | 174 | 190 | 206 | 222 | 238 | 254 | 270 | 286 |
| 15 | 31 | 47 | 63 | 79 | 95 | 111 | 127 | 143 | 159 | 175 | 191 | 207 | 223 | 239 | 255 | 271 | 287 |
| 15 | 31 | 47 | 63 | 79 | 95 | 111 | 127 | 143 | 159 | 175 | 191 | 207 | 223 | 239 | 255 | 271 | 287 |
| 16 | 32 | 48 | 64 | 80 | 96 | 112 | 128 | 144 | 160 | 176 | 192 | 208 | 224 | 240 | 256 | 272 | 288 |
| 16 | 32 | 48 | 64 | 80 | 96 | 112 | 128 | 144 | 160 | 176 | 192 | 208 | 224 | 240 | 256 | 272 | 288 |

**Table 6.1.3.1.5-3. Reverse Traffic Channel Interleaver Memory (Write Operation) for
2400 and 3600 bps**

| | | | | | | | | | | | | | | | | | |
|---|----|----|----|----|----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|
| 1 | 9 | 17 | 25 | 33 | 41 | 49 | 57 | 65 | 73 | 81 | 89 | 97 | 105 | 113 | 121 | 129 | 137 |
| 1 | 9 | 17 | 25 | 33 | 41 | 49 | 57 | 65 | 73 | 81 | 89 | 97 | 105 | 113 | 121 | 129 | 137 |
| 1 | 9 | 17 | 25 | 33 | 41 | 49 | 57 | 65 | 73 | 81 | 89 | 97 | 105 | 113 | 121 | 129 | 137 |
| 1 | 9 | 17 | 25 | 33 | 41 | 49 | 57 | 65 | 73 | 81 | 89 | 97 | 105 | 113 | 121 | 129 | 137 |
| 2 | 10 | 18 | 26 | 34 | 42 | 50 | 58 | 66 | 74 | 82 | 90 | 98 | 106 | 114 | 122 | 130 | 138 |
| 2 | 10 | 18 | 26 | 34 | 42 | 50 | 58 | 66 | 74 | 82 | 90 | 98 | 106 | 114 | 122 | 130 | 138 |
| 2 | 10 | 18 | 26 | 34 | 42 | 50 | 58 | 66 | 74 | 82 | 90 | 98 | 106 | 114 | 122 | 130 | 138 |
| 2 | 10 | 18 | 26 | 34 | 42 | 50 | 58 | 66 | 74 | 82 | 90 | 98 | 106 | 114 | 122 | 130 | 138 |
| 3 | 11 | 19 | 27 | 35 | 43 | 51 | 59 | 67 | 75 | 83 | 91 | 99 | 107 | 115 | 123 | 131 | 139 |
| 3 | 11 | 19 | 27 | 35 | 43 | 51 | 59 | 67 | 75 | 83 | 91 | 99 | 107 | 115 | 123 | 131 | 139 |
| 3 | 11 | 19 | 27 | 35 | 43 | 51 | 59 | 67 | 75 | 83 | 91 | 99 | 107 | 115 | 123 | 131 | 139 |
| 3 | 11 | 19 | 27 | 35 | 43 | 51 | 59 | 67 | 75 | 83 | 91 | 99 | 107 | 115 | 123 | 131 | 139 |
| 4 | 12 | 20 | 28 | 36 | 44 | 52 | 60 | 68 | 76 | 84 | 92 | 100 | 108 | 116 | 124 | 132 | 140 |
| 4 | 12 | 20 | 28 | 36 | 44 | 52 | 60 | 68 | 76 | 84 | 92 | 100 | 108 | 116 | 124 | 132 | 140 |
| 4 | 12 | 20 | 28 | 36 | 44 | 52 | 60 | 68 | 76 | 84 | 92 | 100 | 108 | 116 | 124 | 132 | 140 |
| 4 | 12 | 20 | 28 | 36 | 44 | 52 | 60 | 68 | 76 | 84 | 92 | 100 | 108 | 116 | 124 | 132 | 140 |
| 5 | 13 | 21 | 29 | 37 | 45 | 53 | 61 | 69 | 77 | 85 | 93 | 101 | 109 | 117 | 125 | 133 | 141 |
| 5 | 13 | 21 | 29 | 37 | 45 | 53 | 61 | 69 | 77 | 85 | 93 | 101 | 109 | 117 | 125 | 133 | 141 |
| 5 | 13 | 21 | 29 | 37 | 45 | 53 | 61 | 69 | 77 | 85 | 93 | 101 | 109 | 117 | 125 | 133 | 141 |
| 5 | 13 | 21 | 29 | 37 | 45 | 53 | 61 | 69 | 77 | 85 | 93 | 101 | 109 | 117 | 125 | 133 | 141 |
| 6 | 14 | 22 | 30 | 38 | 46 | 54 | 62 | 70 | 78 | 86 | 94 | 102 | 110 | 118 | 126 | 134 | 142 |
| 6 | 14 | 22 | 30 | 38 | 46 | 54 | 62 | 70 | 78 | 86 | 94 | 102 | 110 | 118 | 126 | 134 | 142 |
| 6 | 14 | 22 | 30 | 38 | 46 | 54 | 62 | 70 | 78 | 86 | 94 | 102 | 110 | 118 | 126 | 134 | 142 |
| 6 | 14 | 22 | 30 | 38 | 46 | 54 | 62 | 70 | 78 | 86 | 94 | 102 | 110 | 118 | 126 | 134 | 142 |
| 7 | 15 | 23 | 31 | 39 | 47 | 55 | 63 | 71 | 79 | 87 | 95 | 103 | 111 | 119 | 127 | 135 | 143 |
| 7 | 15 | 23 | 31 | 39 | 47 | 55 | 63 | 71 | 79 | 87 | 95 | 103 | 111 | 119 | 127 | 135 | 143 |
| 7 | 15 | 23 | 31 | 39 | 47 | 55 | 63 | 71 | 79 | 87 | 95 | 103 | 111 | 119 | 127 | 135 | 143 |
| 7 | 15 | 23 | 31 | 39 | 47 | 55 | 63 | 71 | 79 | 87 | 95 | 103 | 111 | 119 | 127 | 135 | 143 |
| 8 | 16 | 24 | 32 | 40 | 48 | 56 | 64 | 72 | 80 | 88 | 96 | 104 | 112 | 120 | 128 | 136 | 144 |
| 8 | 16 | 24 | 32 | 40 | 48 | 56 | 64 | 72 | 80 | 88 | 96 | 104 | 112 | 120 | 128 | 136 | 144 |
| 8 | 16 | 24 | 32 | 40 | 48 | 56 | 64 | 72 | 80 | 88 | 96 | 104 | 112 | 120 | 128 | 136 | 144 |
| 8 | 16 | 24 | 32 | 40 | 48 | 56 | 64 | 72 | 80 | 88 | 96 | 104 | 112 | 120 | 128 | 136 | 144 |

Table 6.1.3.1.5-4. Reverse Traffic Channel Interleaver Memory (Write Operation) for 1200 and 1800 bps

| | | | | | | | | | | | | | | | | | |
|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| 1 | 5 | 9 | 13 | 17 | 21 | 25 | 29 | 33 | 37 | 41 | 45 | 49 | 53 | 57 | 61 | 65 | 69 |
| 1 | 5 | 9 | 13 | 17 | 21 | 25 | 29 | 33 | 37 | 41 | 45 | 49 | 53 | 57 | 61 | 65 | 69 |
| 1 | 5 | 9 | 13 | 17 | 21 | 25 | 29 | 33 | 37 | 41 | 45 | 49 | 53 | 57 | 61 | 65 | 69 |
| 1 | 5 | 9 | 13 | 17 | 21 | 25 | 29 | 33 | 37 | 41 | 45 | 49 | 53 | 57 | 61 | 65 | 69 |
| 1 | 5 | 9 | 13 | 17 | 21 | 25 | 29 | 33 | 37 | 41 | 45 | 49 | 53 | 57 | 61 | 65 | 69 |
| 1 | 5 | 9 | 13 | 17 | 21 | 25 | 29 | 33 | 37 | 41 | 45 | 49 | 53 | 57 | 61 | 65 | 69 |
| 1 | 5 | 9 | 13 | 17 | 21 | 25 | 29 | 33 | 37 | 41 | 45 | 49 | 53 | 57 | 61 | 65 | 69 |
| 1 | 5 | 9 | 13 | 17 | 21 | 25 | 29 | 33 | 37 | 41 | 45 | 49 | 53 | 57 | 61 | 65 | 69 |
| 2 | 6 | 10 | 14 | 18 | 22 | 26 | 30 | 34 | 38 | 42 | 46 | 50 | 54 | 58 | 62 | 66 | 70 |
| 2 | 6 | 10 | 14 | 18 | 22 | 26 | 30 | 34 | 38 | 42 | 46 | 50 | 54 | 58 | 62 | 66 | 70 |
| 2 | 6 | 10 | 14 | 18 | 22 | 26 | 30 | 34 | 38 | 42 | 46 | 50 | 54 | 58 | 62 | 66 | 70 |
| 2 | 6 | 10 | 14 | 18 | 22 | 26 | 30 | 34 | 38 | 42 | 46 | 50 | 54 | 58 | 62 | 66 | 70 |
| 2 | 6 | 10 | 14 | 18 | 22 | 26 | 30 | 34 | 38 | 42 | 46 | 50 | 54 | 58 | 62 | 66 | 70 |
| 2 | 6 | 10 | 14 | 18 | 22 | 26 | 30 | 34 | 38 | 42 | 46 | 50 | 54 | 58 | 62 | 66 | 70 |
| 2 | 6 | 10 | 14 | 18 | 22 | 26 | 30 | 34 | 38 | 42 | 46 | 50 | 54 | 58 | 62 | 66 | 70 |
| 2 | 6 | 10 | 14 | 18 | 22 | 26 | 30 | 34 | 38 | 42 | 46 | 50 | 54 | 58 | 62 | 66 | 70 |
| 2 | 6 | 10 | 14 | 18 | 22 | 26 | 30 | 34 | 38 | 42 | 46 | 50 | 54 | 58 | 62 | 66 | 70 |
| 3 | 7 | 11 | 15 | 19 | 23 | 27 | 31 | 35 | 39 | 43 | 47 | 51 | 55 | 59 | 63 | 67 | 71 |
| 3 | 7 | 11 | 15 | 19 | 23 | 27 | 31 | 35 | 39 | 43 | 47 | 51 | 55 | 59 | 63 | 67 | 71 |
| 3 | 7 | 11 | 15 | 19 | 23 | 27 | 31 | 35 | 39 | 43 | 47 | 51 | 55 | 59 | 63 | 67 | 71 |
| 3 | 7 | 11 | 15 | 19 | 23 | 27 | 31 | 35 | 39 | 43 | 47 | 51 | 55 | 59 | 63 | 67 | 71 |
| 3 | 7 | 11 | 15 | 19 | 23 | 27 | 31 | 35 | 39 | 43 | 47 | 51 | 55 | 59 | 63 | 67 | 71 |
| 3 | 7 | 11 | 15 | 19 | 23 | 27 | 31 | 35 | 39 | 43 | 47 | 51 | 55 | 59 | 63 | 67 | 71 |
| 3 | 7 | 11 | 15 | 19 | 23 | 27 | 31 | 35 | 39 | 43 | 47 | 51 | 55 | 59 | 63 | 67 | 71 |
| 3 | 7 | 11 | 15 | 19 | 23 | 27 | 31 | 35 | 39 | 43 | 47 | 51 | 55 | 59 | 63 | 67 | 71 |
| 4 | 8 | 12 | 16 | 20 | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 | 60 | 64 | 68 | 72 |
| 4 | 8 | 12 | 16 | 20 | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 | 60 | 64 | 68 | 72 |
| 4 | 8 | 12 | 16 | 20 | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 | 60 | 64 | 68 | 72 |
| 4 | 8 | 12 | 16 | 20 | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 | 60 | 64 | 68 | 72 |
| 4 | 8 | 12 | 16 | 20 | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 | 60 | 64 | 68 | 72 |
| 4 | 8 | 12 | 16 | 20 | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 | 60 | 64 | 68 | 72 |
| 4 | 8 | 12 | 16 | 20 | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 | 60 | 64 | 68 | 72 |
| 4 | 8 | 12 | 16 | 20 | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 | 60 | 64 | 68 | 72 |

6.1.3.1.6 Orthogonal Modulation

Modulation for the Reverse CDMA Channel shall be 64-ary orthogonal modulation. One of 64 possible modulation symbols is transmitted for each six repeated code symbols. The modulation symbol shall be one of 64 mutually orthogonal waveforms generated using Walsh functions. These modulation symbols are given in Table 6.1.3.1.6-1 and are numbered 0 through 63. The modulation symbols shall be selected according to the following formula:

$$\text{Modulation symbol index} = c_0 + 2c_1 + 4c_2 + 8c_3 + 16c_4 + 32c_5,$$

where c_5 shall represent the last (or most recent) and c_0 the first (or oldest) binary valued ('0' and '1') repeated code symbol of each group of six repeated code symbols that form a modulation symbol index.

The 64 by 64 matrix shown in Table 6.1.3.1.6-1 can be generated by means of the following recursive procedure:

$$\mathbf{H}_1 = 0, \quad \mathbf{H}_2 = \begin{bmatrix} 0 & 0 \\ 0 & 1 \end{bmatrix},$$

$$\mathbf{H}_4 = \begin{bmatrix} 0 & 0 & 0 & 0 \\ 0 & 1 & 0 & 1 \\ 0 & 0 & 1 & 1 \\ 0 & 1 & 1 & 0 \end{bmatrix}, \quad \mathbf{H}_{2N} = \begin{bmatrix} \mathbf{H}_N & \mathbf{H}_N \\ \mathbf{H}_N & \overline{\mathbf{H}}_N \end{bmatrix},$$

where N is a power of 2 and $\overline{\mathbf{H}}_N$ denotes the binary complement of \mathbf{H}_N .

The period of time required to transmit a single modulation symbol shall be equal to 1/4800 second (208.333... μs). The period of time associated with one-sixty-fourth of the modulation symbol is referred to as a Walsh chip and shall be equal to 1/307200 second (3.255... μs).

Within a modulation symbol, Walsh chips shall be transmitted in the order of 0, 1, 2, ..., 63.

Table 6.1.3.1.6-1. 64-ary Orthogonal Symbol Set

| Walsh Chip within Symbol | | | | | | | | | | | | | | | | | |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| | 0123 | 4567 | 8901 | 1111 | 1111 | 2222 | 2222 | 2233 | 3333 | 3333 | 4444 | 4444 | 4455 | 5555 | 5555 | 6666 | 6666 |
| | 0123 | 4567 | 8901 | 2345 | 6789 | 0123 | 4567 | 8901 | 2345 | 6789 | 0123 | 4567 | 8901 | 2345 | 6789 | 0123 | 4567 |
| MODULO 16 | 0 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 |
| | 1 | 0101 | 0101 | 0101 | 0101 | 0101 | 0101 | 0101 | 0101 | 0101 | 0101 | 0101 | 0101 | 0101 | 0101 | 0101 | 0101 |
| | 2 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 |
| | 3 | 0110 | 0110 | 0110 | 0110 | 0110 | 0110 | 0110 | 0110 | 0110 | 0110 | 0110 | 0110 | 0110 | 0110 | 0110 | 0110 |
| | 4 | 0000 | 1111 | 0000 | 1111 | 0000 | 1111 | 0000 | 1111 | 0000 | 1111 | 0000 | 1111 | 0000 | 1111 | 0000 | 1111 |
| | 5 | 0101 | 1010 | 0101 | 1010 | 0101 | 1010 | 0101 | 1010 | 0101 | 1010 | 0101 | 1010 | 0101 | 1010 | 0101 | 1010 |
| | 6 | 0011 | 1100 | 0011 | 1100 | 0011 | 1100 | 0011 | 1100 | 0011 | 1100 | 0011 | 1100 | 0011 | 1100 | 0011 | 1100 |
| | 7 | 0110 | 1001 | 0110 | 1001 | 0110 | 1001 | 0110 | 1001 | 0110 | 1001 | 0110 | 1001 | 0110 | 1001 | 0110 | 1001 |
| | 8 | 0000 | 0000 | 1111 | 1111 | 0000 | 0000 | 1111 | 1111 | 0000 | 0000 | 1111 | 1111 | 0000 | 0000 | 1111 | 1111 |
| | 9 | 0101 | 0101 | 1010 | 1010 | 0101 | 0101 | 1010 | 1010 | 0101 | 0101 | 1010 | 1010 | 0101 | 0101 | 1010 | 1010 |
| | 10 | 0011 | 0011 | 1100 | 1100 | 0011 | 0011 | 1100 | 1100 | 0011 | 0011 | 1100 | 1100 | 0011 | 0011 | 1100 | 1100 |
| | 11 | 0110 | 0110 | 1001 | 1001 | 0110 | 0110 | 1001 | 1001 | 0110 | 0110 | 1001 | 1001 | 0110 | 0110 | 1001 | 1001 |
| | 12 | 0000 | 1111 | 1111 | 0000 | 0000 | 1111 | 1111 | 0000 | 0000 | 1111 | 1111 | 0000 | 0000 | 1111 | 1111 | 0000 |
| | 13 | 0101 | 1010 | 1010 | 0101 | 0101 | 1010 | 1010 | 0101 | 0101 | 1010 | 1010 | 0101 | 0101 | 1010 | 1010 | 0101 |
| | 14 | 0011 | 1100 | 1100 | 0011 | 0011 | 1100 | 1100 | 0011 | 0011 | 1100 | 1100 | 0011 | 0011 | 1100 | 1100 | 0011 |
| | 15 | 0110 | 1001 | 1001 | 0110 | 0110 | 1001 | 1001 | 0110 | 0110 | 1001 | 1001 | 0110 | 0110 | 1001 | 1001 | 0110 |
| MODULO 16 | 16 | 0000 | 0000 | 0000 | 0000 | 1111 | 1111 | 1111 | 1111 | 0000 | 0000 | 0000 | 0000 | 1111 | 1111 | 1111 | 1111 |
| | 17 | 0101 | 0101 | 0101 | 0101 | 1010 | 1010 | 1010 | 1010 | 0101 | 0101 | 0101 | 0101 | 1010 | 1010 | 1010 | 1010 |
| | 18 | 0011 | 0011 | 0011 | 0011 | 1100 | 1100 | 1100 | 1100 | 0011 | 0011 | 0011 | 0011 | 1100 | 1100 | 1100 | 1100 |
| | 19 | 0110 | 0110 | 0110 | 0110 | 1001 | 1001 | 1001 | 1001 | 0110 | 0110 | 0110 | 0110 | 1001 | 1001 | 1001 | 1001 |
| | 20 | 0000 | 1111 | 0000 | 1111 | 1111 | 0000 | 1111 | 0000 | 0000 | 1111 | 0000 | 1111 | 0000 | 1111 | 0000 | 1111 |
| | 21 | 0101 | 1010 | 0101 | 1010 | 1010 | 0101 | 1010 | 0101 | 1010 | 0101 | 1010 | 1010 | 0101 | 1010 | 0101 | 1010 |
| | 22 | 0011 | 1100 | 0011 | 1100 | 1100 | 0011 | 1100 | 0011 | 1100 | 0011 | 1100 | 1100 | 0011 | 1100 | 0011 | 1100 |
| | 23 | 0110 | 1001 | 0110 | 1001 | 1001 | 0110 | 1001 | 0110 | 1001 | 0110 | 1001 | 1001 | 0110 | 1001 | 0110 | 1001 |
| | 24 | 0000 | 0000 | 1111 | 1111 | 1111 | 0000 | 0000 | 0000 | 0000 | 1111 | 1111 | 1111 | 0000 | 0000 | 1111 | 1111 |
| | 25 | 0101 | 0101 | 1010 | 1010 | 1010 | 0101 | 1010 | 0101 | 1010 | 0101 | 1010 | 1010 | 0101 | 1010 | 0101 | 1010 |
| | 26 | 0011 | 0011 | 1100 | 1100 | 1100 | 0011 | 1100 | 0011 | 0011 | 1100 | 1100 | 1100 | 0011 | 1100 | 0011 | 1100 |
| | 27 | 0110 | 0110 | 1001 | 1001 | 1001 | 0110 | 1001 | 0110 | 0110 | 1001 | 1001 | 1001 | 0110 | 1001 | 0110 | 1001 |
| | 28 | 0000 | 1111 | 1111 | 0000 | 0000 | 1111 | 0000 | 0000 | 1111 | 1111 | 0000 | 0000 | 1111 | 1111 | 0000 | 0000 |
| | 29 | 0101 | 1010 | 1010 | 0101 | 1010 | 0101 | 1010 | 0101 | 1010 | 0101 | 1010 | 1010 | 0101 | 1010 | 0101 | 1010 |
| | 30 | 0011 | 1100 | 1100 | 0011 | 1100 | 0011 | 1100 | 0011 | 1100 | 0011 | 1100 | 1100 | 0011 | 1100 | 0011 | 1100 |
| | 31 | 0110 | 1001 | 1001 | 0110 | 1001 | 0110 | 1001 | 0110 | 1001 | 0110 | 1001 | 1001 | 0110 | 1001 | 0110 | 1001 |
| MODULO 16 | 32 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 |
| | 33 | 0101 | 0101 | 0101 | 0101 | 0101 | 0101 | 0101 | 0101 | 1010 | 1010 | 1010 | 1010 | 1010 | 1010 | 1010 | 1010 |
| | 34 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 1100 | 1100 | 1100 | 1100 | 1100 | 1100 | 1100 | 1100 |
| | 35 | 0110 | 0110 | 0110 | 0110 | 0110 | 0110 | 0110 | 0110 | 1001 | 1001 | 1001 | 1001 | 1001 | 1001 | 1001 | 1001 |
| | 36 | 0000 | 1111 | 0000 | 1111 | 0000 | 1111 | 0000 | 1111 | 1111 | 0000 | 1111 | 0000 | 1111 | 0000 | 1111 | 0000 |
| | 37 | 0101 | 1010 | 0101 | 1010 | 0101 | 1010 | 0101 | 1010 | 1010 | 0101 | 1010 | 0101 | 1010 | 0101 | 1010 | 0101 |
| | 38 | 0011 | 1100 | 0011 | 1100 | 0011 | 1100 | 0011 | 1100 | 1100 | 0011 | 1100 | 0011 | 1100 | 0011 | 1100 | 0011 |
| | 39 | 0110 | 1001 | 0110 | 1001 | 0110 | 1001 | 0110 | 1001 | 1001 | 0110 | 1001 | 0110 | 1001 | 0110 | 1001 | 0110 |
| | 40 | 0000 | 0000 | 1111 | 1111 | 0000 | 0000 | 1111 | 1111 | 1111 | 0000 | 0000 | 1111 | 1111 | 0000 | 0000 | 1111 |
| | 41 | 0101 | 0101 | 1010 | 1010 | 0101 | 0101 | 1010 | 1010 | 0101 | 1010 | 0101 | 1010 | 0101 | 1010 | 0101 | 1010 |
| | 42 | 0011 | 0011 | 1100 | 1100 | 0011 | 0011 | 1100 | 1100 | 0011 | 0011 | 1100 | 1100 | 0011 | 0011 | 1100 | 1100 |
| | 43 | 0110 | 0110 | 1001 | 1001 | 0110 | 0110 | 1001 | 1001 | 0110 | 0110 | 1001 | 1001 | 0110 | 0110 | 1001 | 1001 |
| | 44 | 0000 | 1111 | 1111 | 0000 | 0000 | 1111 | 1111 | 0000 | 0000 | 1111 | 1111 | 0000 | 0000 | 1111 | 1111 | 0000 |
| | 45 | 0101 | 1010 | 1010 | 0101 | 0101 | 1010 | 1010 | 0101 | 1010 | 0101 | 1010 | 1010 | 0101 | 1010 | 0101 | 1010 |
| | 46 | 0011 | 1100 | 1100 | 0011 | 0011 | 1100 | 1100 | 0011 | 0011 | 1100 | 1100 | 0011 | 0011 | 1100 | 1100 | 0011 |
| | 47 | 0110 | 1001 | 1001 | 0110 | 0110 | 1001 | 1001 | 0110 | 0110 | 1001 | 1001 | 0110 | 1001 | 0110 | 1001 | 0110 |
| MODULO 16 | 48 | 0000 | 0000 | 0000 | 0000 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 0000 | 0000 | 0000 | 0000 |
| | 49 | 0101 | 0101 | 0101 | 0101 | 1010 | 1010 | 1010 | 1010 | 1010 | 1010 | 1010 | 1010 | 0101 | 0101 | 0101 | 0101 |
| | 50 | 0011 | 0011 | 0011 | 0011 | 1100 | 1100 | 1100 | 1100 | 1100 | 1100 | 1100 | 1100 | 0011 | 0011 | 0011 | 0011 |
| | 51 | 0110 | 0110 | 0110 | 0110 | 1001 | 1001 | 1001 | 1001 | 1001 | 1001 | 1001 | 1001 | 0110 | 0110 | 0110 | 0110 |
| | 52 | 0000 | 1111 | 0000 | 1111 | 1111 | 0000 | 1111 | 0000 | 0000 | 1111 | 0000 | 0000 | 1111 | 0000 | 1111 | 0000 |
| | 53 | 0101 | 1010 | 0101 | 1010 | 1010 | 0101 | 1010 | 0101 | 1010 | 0101 | 1010 | 1010 | 0101 | 1010 | 0101 | 1010 |
| | 54 | 0011 | 1100 | 0011 | 1100 | 1100 | 0011 | 1100 | 0011 | 1100 | 0011 | 1100 | 1100 | 0011 | 1100 | 0011 | 1100 |
| | 55 | 0110 | 1001 | 0110 | 1001 | 1001 | 0110 | 1001 | 0110 | 1001 | 0110 | 1001 | 1001 | 0110 | 1001 | 0110 | 1001 |
| | 56 | 0000 | 0000 | 1111 | 1111 | 0000 | 0000 | 1111 | 1111 | 0000 | 0000 | 1111 | 1111 | 0000 | 0000 | 1111 | 1111 |
| | 57 | 0101 | 0101 | 1010 | 1010 | 0101 | 0101 | 1010 | 1010 | 0101 | 1010 | 0101 | 1010 | 0101 | 1010 | 0101 | 1010 |
| | 58 | 0011 | 0011 | 1100 | 1100 | 0011 | 0011 | 1100 | 1100 | 0011 | 0011 | 1100 | 1100 | 0011 | 0011 | 1100 | 1100 |
| | 59 | 0110 | 0110 | 1001 | 1001 | 0110 | 0110 | 1001 | 1001 | 0110 | 0110 | 1001 | 1001 | 0110 | 0110 | 1001 | 1001 |
| | 60 | 0000 | 1111 | 1111 | 0000 | 0000 | 1111 | 0000 | 0000 | 1111 | 1111 | 0000 | 0000 | 1111 | 1111 | 0000 | 0000 |
| | 61 | 0101 | 1010 | 1010 | 0101 | 0101 | 1010 | 1010 | 0101 | 1010 | 0101 | 1010 | 1010 | 0101 | 1010 | 0101 | 1010 |
| | 62 | 0011 | 1100 | 1100 | 0011 | 0011 | 1100 | 1100 | 0011 | 0011 | 1100 | 1100 | 0011 | 0011 | 1100 | 1100 | 0011 |
| | 63 | 0110 | 1001 | 1001 | 0110 | 0110 | 1001 | 1001 | 0110 | 0110 | 1001 | 1001 | 0110 | 0110 | 1001 | 1001 | 0110 |

6.1.3.1.7 Variable Data Rate Transmission

6.1.3.1.7.1 Rates and Gating

The Reverse Code Channel interleaver output stream is time-gated to allow transmission of certain interleaver output symbols and deletion of others. This process is illustrated in Figure 6.1.3.1.7.1-1. As shown in the figure, the duty cycle of the transmission gate varies with the transmit data rate. When the transmit data rate is 9600 or 14400 bps, the transmission gate allows all interleaver output symbols to be transmitted. When the transmit data rate is 4800 or 7200 bps, the transmission gate allows one-half of the interleaver output symbols to be transmitted, and so forth. The gating process operates by dividing the 20 ms frame into 16 equal length (i.e., 1.25 ms) periods, called power control groups (PCG). Certain power control groups are gated-on (i.e., transmitted), while other groups are gated-off (i.e., not transmitted).

The assignment of gated-on and gated-off groups, referred to as the data burst randomizing function, is specified in 6.1.3.1.7.2. The gated-on power control groups are pseudo randomized in their positions within the frame. The data burst randomizer ensures that every code symbol input to the repetition process is transmitted exactly once. During the gated-off periods, the mobile station shall comply with the requirement in 6.1.2.2.2, thus reducing the interference to other mobile stations operating on the same Reverse CDMA Channel.

The data burst randomizer is not used during a PUF probe (see 6.1.1.7.3).

When transmitting on the Access Channel, the code symbols are repeated once (each symbol occurs twice) prior to transmission. The data burst randomizer is not used when the mobile station transmits on the Access Channel. Therefore, both copies of the repeated code symbols are transmitted as shown in Figure 6.1.3.1.7.1-2.

6.1.3.1.7.2 Data Burst Randomizing Algorithm

The data burst randomizer generates a masking pattern of '0's and '1's that randomly masks out the redundant data generated by the code repetition. The masking pattern is determined by the data rate of the frame and by a block of 14 bits taken from the long code. These 14 bits shall be the last 14 bits of the long code used for spreading in the previous to the last power control group of the previous frame (see Figure 6.1.3.1.7.1-1). In other words, these are the 14 bits which occur exactly one power control group (1.25 ms) before each Reverse Code Channel frame boundary. These 14 bits are denoted as

$$b_0 \ b_1 \ b_2 \ b_3 \ b_4 \ b_5 \ b_6 \ b_7 \ b_8 \ b_9 \ b_{10} \ b_{11} \ b_{12} \ b_{13},$$

where b_0 represents the oldest bit, and b_{13} represents the latest bit.⁴

⁴ In order to randomize the position of the data bursts, only 8 bits are strictly necessary. The algorithm described here uses 14 bits to assure that the slots used for data transmission at the quarter rate are a subset of the slots used at the half rate, and that the slots used at the one-eighth rate are a subset of the slots used at the quarter rate.

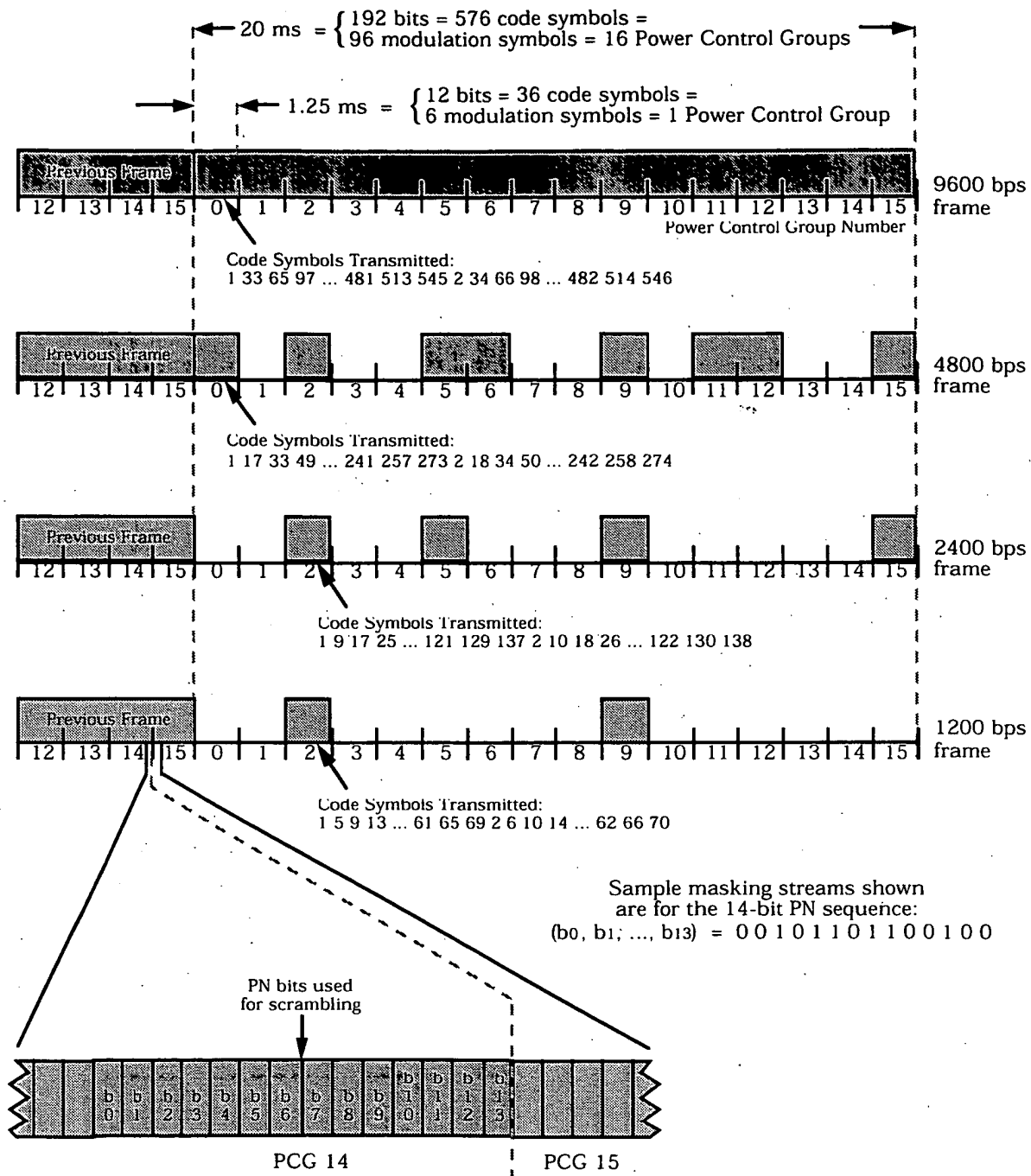


Figure 6.1.3.1.7.1-1. Reverse CDMA Channel Variable Data Rate Transmission Example

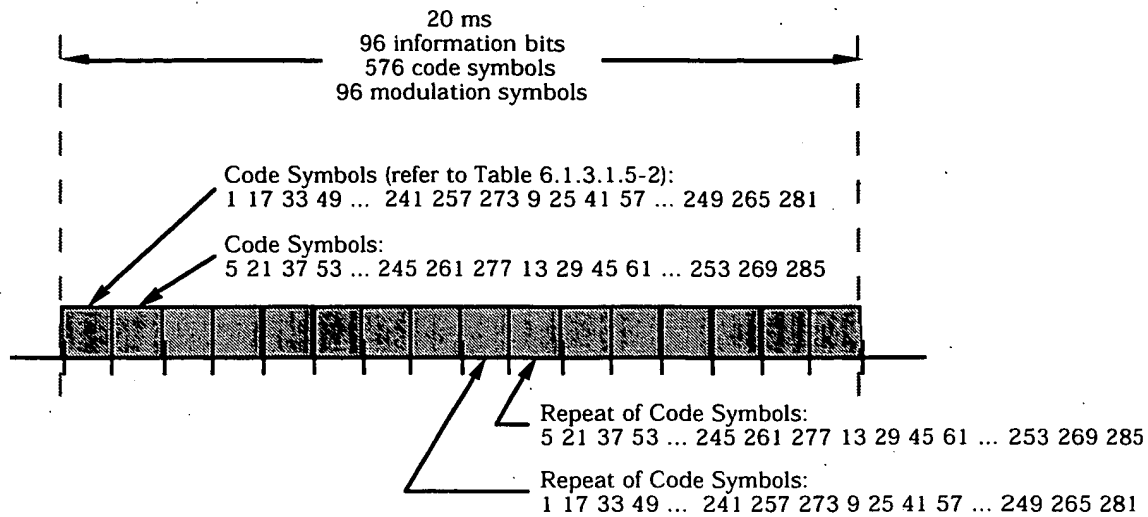


Figure 6.1.3.1.7.1-2. Access Channel Transmission Structure

Each 20 ms Reverse Code Channel frame shall be divided into 16 equal length (i.e., 1.25 ms) power control groups numbered from 0 to 15 as shown in Figure 6.1.3.1.7.1-1. The data burst randomizer algorithm shall be as follows:

Data Rate Selected: 9600 or 14400 bps

Transmission shall occur on power control groups numbered:

0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15.

Data Rate Selected: 4800 or 7200 bps

Transmission shall occur on power control groups numbered:

$b_0, 2 + b_1, 4 + b_2, 6 + b_3, 8 + b_4, 10 + b_5, 12 + b_6, 14 + b_7$.

Data Rate Selected: 2400 or 3600 bps

Transmission shall occur on power control groups numbered:

| | | | | |
|------------|---------------------|----|------------|---------------------|
| b_0 | if $b_8 = '0'$, | or | $2 + b_1$ | if $b_8 = '1'$; |
| $4 + b_2$ | if $b_9 = '0'$, | or | $6 + b_3$ | if $b_9 = '1'$; |
| $8 + b_4$ | if $b_{10} = '0'$, | or | $10 + b_5$ | if $b_{10} = '1'$; |
| $12 + b_6$ | if $b_{11} = '0'$, | or | $14 + b_7$ | if $b_{11} = '1'$. |

1 Data Rate Selected: 1200 or 1800 bps

2 Transmission shall occur on power control groups numbered:

3 b_0 if $(b_8, b_{12}) = ('0', '0')$, or

4 $2 + b_1$ if $(b_8, b_{12}) = ('1', '0')$, or

5 $4 + b_2$ if $(b_9, b_{12}) = ('0', '1')$, or

6 $6 + b_3$ if $(b_9, b_{12}) = ('1', '1')$;

7 $8 + b_4$ if $(b_{10}, b_{13}) = ('0', '0')$, or

8 $10 + b_5$ if $(b_{10}, b_{13}) = ('1', '0')$, or

9 $12 + b_6$ if $(b_{11}, b_{13}) = ('0', '1')$, or

10 $14 + b_7$ if $(b_{11}, b_{13}) = ('1', '1')$.

11 6.1.3.1.7.3 Gating During a PUF Probe

12 The mobile station shall transmit as gated-on all power control groups during the PUF
13 setup and PUF pulse portions of a PUF probe, except when the transmitter is disabled.

14 If the transmitter is enabled during the PUF recovery portion of a PUF probe, the mobile
15 station shall either transmit all power control groups as gated-on, or else gate off (not
16 transmit) all power control groups.

17 6.1.3.1.8 Direct Sequence Spreading

18 Direct sequence spreading using the long code shall be applied to the Reverse Code
19 Channels and to the Access Channel. For the Reverse Code Channels, this spreading
20 operation involves modulo-2 addition of the data burst randomizer output stream and the
21 long code. For the Access Channel, this spreading operation involves modulo-2 addition of
22 the 64-ary orthogonal modulator output stream and the long code.

23 This long code shall be periodic with period $2^{42}-1$ chips and shall satisfy the linear
24 recursion specified by the following characteristic polynomial:

$$p(x) = x^{42} + x^{35} + x^{33} + x^{31} + x^{27} + x^{26} + x^{25} + x^{22} + x^{21} + x^{19} + \\ x^{18} + x^{17} + x^{16} + x^{10} + x^7 + x^6 + x^5 + x^3 + x^2 + x^1 + 1.$$

27 Each PN chip of the long code shall be generated by the modulo-2 inner product of a 42-bit
28 mask and the 42-bit state vector of the sequence generator as shown in Figure 6.1.3.1.8-1.

29 The time alignment of the long code generator shall be as shown in Figure 1.2-1.

30 The mask used for the long code varies depending on the channel type on which the mobile
31 station is transmitting. See Figure 6.1.3.1.8-2.

32 When transmitting on the Access Channel, the mask shall be as follows:

- 33 • M_{41} through M_{33} shall be set to '110001111',
- 34 • M_{32} through M_{28} shall be set to the Access Channel number chosen
35 (see 6.6.3.1.1.2),

- 1 • M₂₇ through M₂₅ shall be set to the code channel number for the associated Paging
- 2 Channel (the range is 1 through 7),
- 3 • M₂₄ through M₉ shall be set to the BASE_ID value (see 7.7.2.3.2.1) for the current
- 4 base station, and
- 5 • M₈ through M₀ shall be set to the PILOT_PN value for the current CDMA Channel
- 6 (see 7.7.1.3 and Figure 6.1.3.1.8-2).

7 When a mobile station is transmitting on n code channels (i.e., the Fundamental Code
 8 Channel, and $n - 1$ Supplemental Code Channels) of the Reverse Traffic Channel, the
 9 mobile station shall use on each of the code channels one of two long code masks unique to
 10 that code channel; either a public long code mask unique to the mobile station's ESN or a
 11 private long code mask.

12 For the public long code mask, bits M₃₁ through M₀ shall be set to a permutation of the
 13 mobile station's ESN as follows:

$$14 \quad \text{ESN} = (E_{31}, E_{30}, E_{29}, E_{28}, E_{27}, E_{26}, E_{25}, \dots, E_2, E_1, E_0)$$

$$15 \quad \text{Permuted ESN} = (E_0, E_{31}, E_{22}, E_{13}, E_4, E_{26}, E_{17}, E_8, E_{30}, E_{21}, E_{12}, E_3, E_{25}, E_{16},$$

$$16 \quad E_7, E_{29}, E_{20}, E_{11}, E_2, E_{24}, E_{15}, E_6, E_{28}, E_{19}, E_{10}, E_1, E_{23}, E_{14},$$

$$17 \quad E_5, E_{27}, E_{18}, E_9)^5$$

18 Bits M₄₁ through M₃₂ shall be set to '1100011000'.

19 The private long code mask shall be as specified in Annex A.

20 The Reverse Fundamental Code Channel shall be assigned the channel number 0, and each
 21 of the $n - 1$ Reverse Supplemental Code Channels shall be assigned the numbers 1 through
 22 $n - 1$. Bits M₃₉ through M₃₇ of the public or private long code mask for assigned code
 23 channel i , $0 \leq i \leq (n - 1) \leq \text{NUM_REV_CODES}_s$, shall be XORed with the value i .
 24 NUM_REV_CODES_s is the currently active number of channels received in a *Supplemental*
 25 *Channel Assignment Message* or *General Handoff Direction Message*. The resulting public
 26 long code mask is shown in Figure 6.1.3.1.8-2.

⁵ This permutation prevents high correlation between long codes corresponding to consecutive ESN_s.

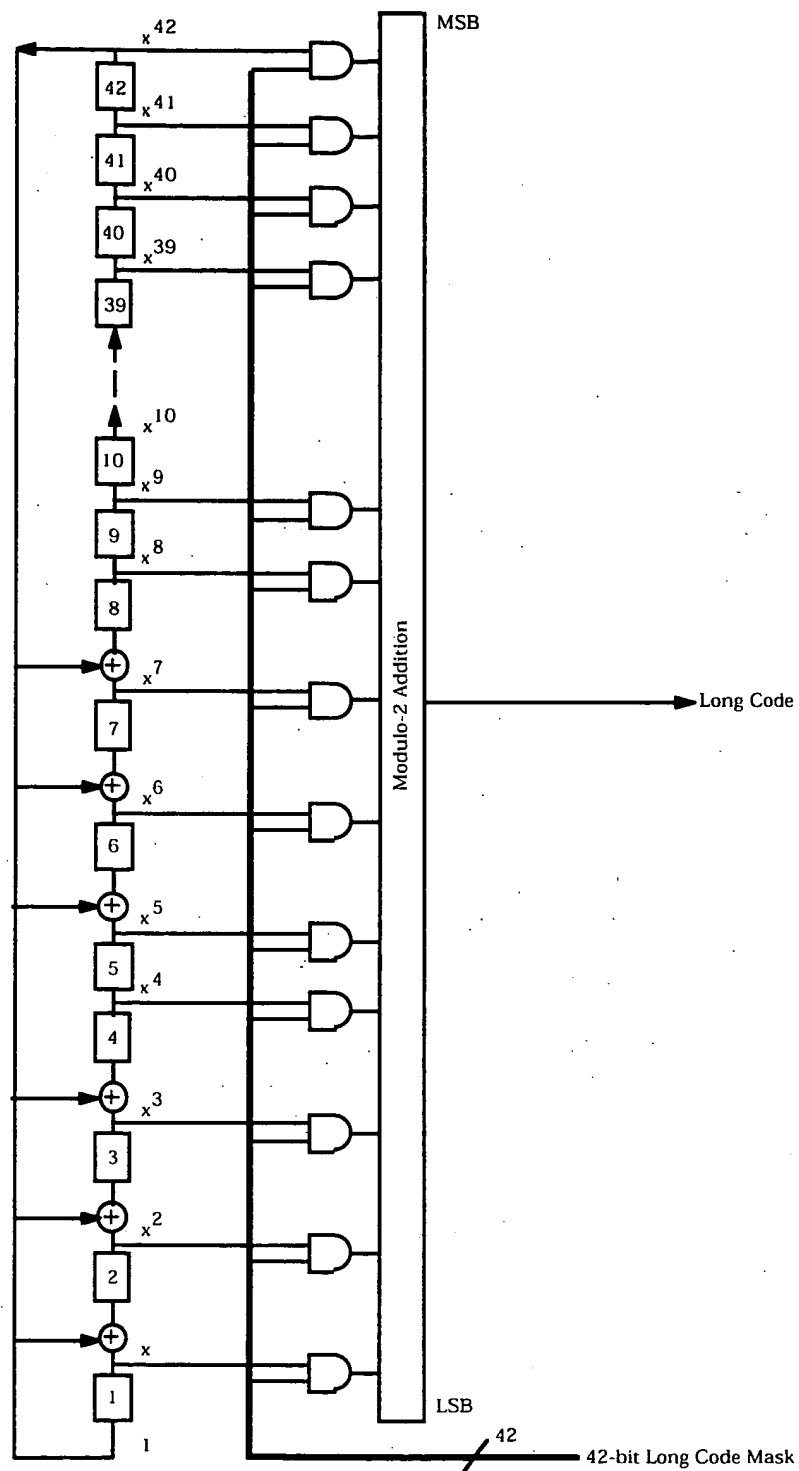


Figure 6.1.3.1.8-1. Long Code Generator



3

4

5

6

7



9

0

1

2

2

9

5

3

9

0

•

1

1

6.1.3.1.9 Quadrature Spreading

Following the direct sequence spreading, the Access Channel and the Fundamental and Supplemental Code Channels of the Reverse Traffic Channel are spread in quadrature as shown in Figures 6.1.3.1-2, 6.1.2.1-3, and 6.1.3.1-4. The sequences used for this spreading shall be the zero-offset I and Q pilot PN sequences used on the Forward CDMA Channel (see 7.1.3.2.1). These sequences are periodic with period 2^{15} chips and shall be based on the following characteristic polynomials, respectively:

$$P_I(x) = x^{15} + x^{13} + x^9 + x^8 + x^7 + x^5 + 1$$

(for the in-phase (I) sequence)

and

$$P_Q(x) = x^{15} + x^{12} + x^{11} + x^{10} + x^6 + x^5 + x^4 + x^3 + 1$$

(for the quadrature-phase (Q) sequence).

The maximum length linear feedback shift register sequences, $\{i(n)\}$ and $\{q(n)\}$, based on the above polynomials are of period $2^{15}-1$ and can be generated by using the following linear recursions:

$$i(n) = i(n-15) \oplus i(n-10) \oplus i(n-8) \oplus i(n-7) \oplus i(n-6) \oplus i(n-2)$$

(based on $P_I(x)$ as the characteristic polynomial)

and

$$q(n) = q(n-15) \oplus q(n-12) \oplus q(n-11) \oplus q(n-10) \oplus q(n-9) \oplus q(n-5) \oplus q(n-4) \oplus q(n-3)$$

(based on $P_Q(x)$ as the characteristic polynomial),

where $i(n)$ and $q(n)$ are binary-valued ('0' and '1') and the additions are modulo-2. In order to obtain the I and Q pilot PN sequences (of period 2^{15}), a '0' is inserted in $\{i(n)\}$ and $\{q(n)\}$ after 14 consecutive '0' outputs (this occurs only once in each period); therefore, the pilot PN sequences have one run of 15 consecutive '0' outputs instead of 14.

The mobile station shall align the I and Q pilot PN sequences such that the first chip on every even second mark as referenced to the transmit time reference (see 6.1.5.1) is the '1' after the 15 consecutive '0's (see Figure 1.2-1).

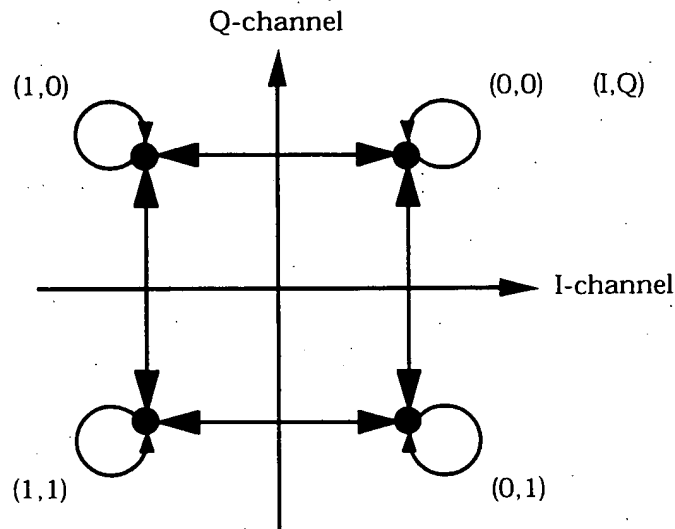
The pilot PN sequences repeat every 26.666... ms ($= 2^{15}/1228800$ seconds). There are exactly 75 repetitions in every 2 seconds.

The data spread by the Q pilot PN sequence shall be delayed by half a PN chip time (406.901 ns) with respect to the data spread by the I pilot PN sequence.

After baseband filtering (see 6.1.3.1.10), the binary data ('0's and '1's), I and Q shown in Figures 6.1.3.1-2, 6.1.3.1-3, and 6.1.3.1-4, shall be mapped into phase according to Table 6.1.3.1.9-1. The resulting signal constellation and phase transition are shown in Figure 6.1.3.1.9-1.

Table 6.1.3.1.9-1. Reverse CDMA Channel I and Q Mapping

| I | Q | Phase |
|---|---|-----------|
| 0 | 0 | $\pi/4$ |
| 1 | 0 | $3\pi/4$ |
| 1 | 1 | $-3\pi/4$ |
| 0 | 1 | $-\pi/4$ |

**Figure 6.1.3.1.9-1. Reverse CDMA Channel Signal Constellation and Phase Transition****6.1.3.1.10 Baseband Filtering**

Following the spreading operation, the I and Q impulses are applied to the inputs of the I and Q baseband filters as shown in Figures 6.1.3.1-2, 6.1.3.1-3, and 6.1.3.1-4. The baseband filters shall have a frequency response $S(f)$ that satisfies the limits given in Figure 6.1.3.1.10-1. Specifically, the normalized frequency response of the filter shall be contained within $\pm\delta_1$ in the passband $0 \leq f \leq f_p$ and shall be less than or equal to $-\delta_2$ in the stopband $f \geq f_s$. The numerical values for the parameters are $\delta_1 = 1.5$ dB, $\delta_2 = 40$ dB, $f_p = 590$ kHz, and $f_s = 740$ kHz.

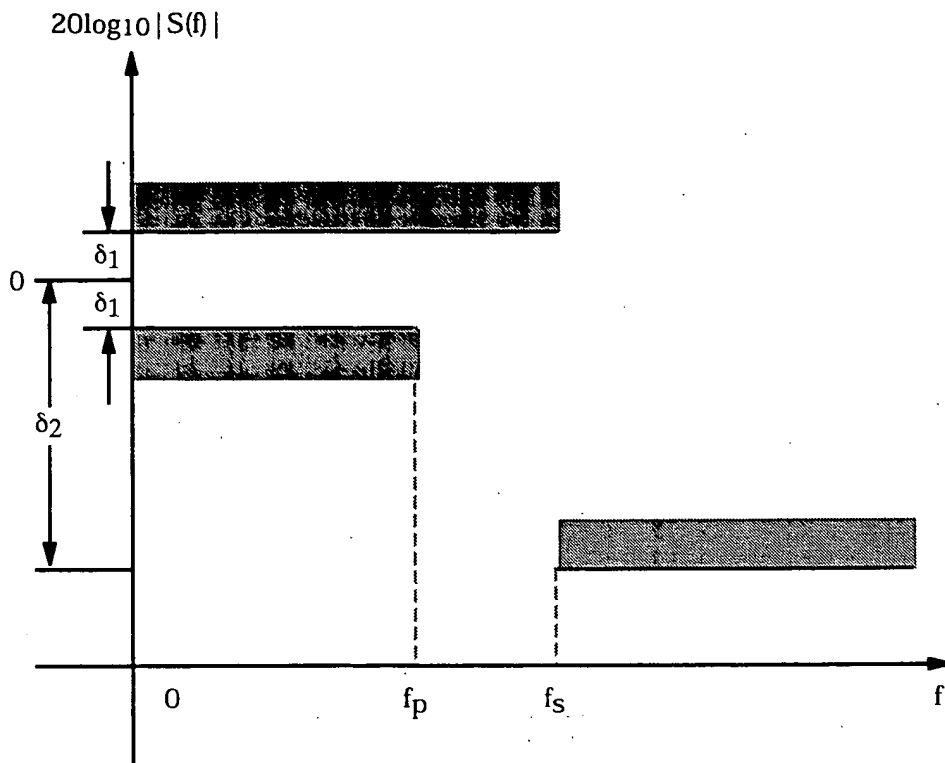


Figure 6.1.3.1.10-1. Baseband Filters Frequency Response Limits

Let $s(t)$ be the impulse response of the baseband filter. Then $s(t)$ should satisfy the following equation:

$$\text{Mean Squared Error} = \sum_{k=0}^{\infty} [\alpha s(kT_s - \tau) - h(k)]^2 \leq 0.03,$$

where the constants α and τ are used to minimize the mean squared error. The constant T_s is equal to 203.451... ns, which equals one quarter of the duration of a PN chip. The values of the coefficients $h(k)$, for $k < 48$, are given in Table 6.1.3.1.10-1; $h(k) = 0$ for $k \geq 48$. Note that $h(k)$ equals $h(47 - k)$.

Table 6.1.3.1.10-1. Coefficients $h(k)$

| k | $h(k)$ |
|----------|--------------------------|
| 0, 47 | -0.025288315 |
| 1, 46 | -0.034167931 |
| 2, 45 | -0.035752323 |
| 3, 44 | -0.016733702 |
| 4, 43 | 0.021602514 |
| 5, 42 | 0.064938487 |
| 6, 41 | 0.091002137 |
| 7, 40 | 0.081894974 |
| 8, 39 | 0.037071157 |
| 9, 38 | -0.021998074 |
| 10, 37 | -0.060716277 |
| 11, 36 | -0.051178658 |
| 12, 35 | 0.007874526 |
| 13, 34 | 0.084368728 |
| 14, 33 | 0.126869306 |
| 15, 32 | 0.094528345 |
| 16, 31 | -0.012839661 |
| 17, 30 | -0.143477028 |
| 18, 29 | -0.211829088 |
| 19, 28 | -0.140513128 |
| 20, 27 | 0.094601918 |
| 21, 26 | 0.441387140 |
| 22, 25 | 0.785875640 |
| 23, 24 | 1.0 |

6.1.3.1.11 Multi-Channel Carrier Phase Offset

The phase offset ϕ_i represents the angular offset between the i^{th} Supplemental Code Channel and the Fundamental Code Channel as shown in Figure 6.1.3.1-7. The phase offset ϕ_i of Supplemental Code Channel i shall take the values given in Table 6.1.3.1.11-1.

Table 6.1.3.1.11-1. Supplemental Code Channel Carrier Phase Offsets

| Supplemental Code Channel i | Carrier Phase Offset ϕ_i (radian) |
|-------------------------------|--|
| 1 | $\pi/2$ |
| 2 | $\pi/4$ |
| 3 | $3\pi/4$ |
| 4 | 0 |
| 5 | $\pi/2$ |
| 6 | $\pi/4$ |
| 7 | $3\pi/4$ |

6.1.3.2 Access Channel

The Access Channel is used by the mobile station to initiate communication with the base station and to respond to Paging Channel messages. An Access Channel transmission is a coded, interleaved, and modulated spread-spectrum signal. The Access Channel uses a random-access protocol (see 6.6.3.1.1). Access Channels are uniquely identified by their long codes (see 6.1.3.1.8).

6.1.3.2.1 Access Channel Time Alignment and Modulation Rate

The mobile station shall transmit information on the Access Channel at a fixed data rate of 4800 bps. An Access Channel frame shall be 20 ms in duration. An Access Channel frame shall begin only when System Time is an integral multiple of 20 ms (see Figure 1.2-1).

The synchronization, timing, and structure of the Access Channel are specified in 6.6.3.1.1 and 6.7.1.1.

The Reverse CDMA Channel may contain up to 32 Access Channels numbered 0 through 31 per supported Paging Channel. At least one Access Channel exists on the Reverse CDMA Channel for each Paging Channel on the corresponding Forward CDMA Channel. Each Access Channel is associated with a single Paging Channel.

6.1.3.2.2 Access Channel Frame Structure

Each Access Channel frame contains 96 bits (20 ms frame at 4800 bps). Each Access Channel frame shall consist of 88 information bits and eight Encoder Tail Bits (see Figure 6.1.3.2.2-1).

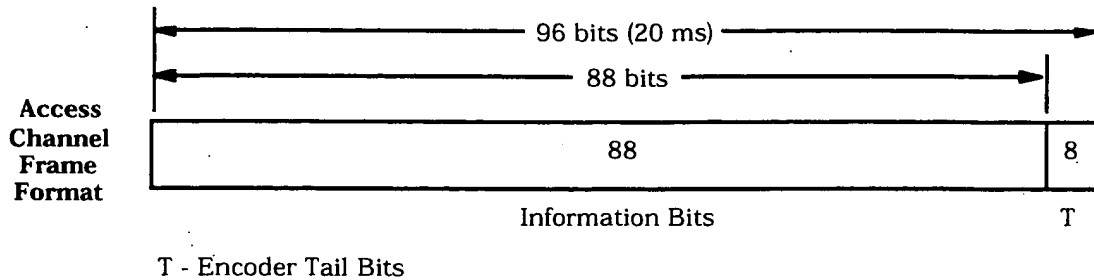


Figure 6.1.3.2.2-1. Access Channel Frame Structure

6.1.3.2.2.1 Access Channel Preamble

The Access Channel preamble shall consist of frames of 96 zeros that are transmitted at the 4800 bps rate. The Access Channel preamble is transmitted to aid the base station in acquiring an Access Channel transmission (see 6.7.1.1).

6.1.3.2.3 Access Channel Convolutional Encoding

The Access Channel data shall be convolutionally encoded as specified in 6.1.3.1.3.

When generating Access Channel data, the encoder shall be initialized (see 6.1.3.1.3.1) at the end of each 20 ms frame.

6.1.3.2.4 Access Channel Code Symbol Repetition

Each code symbol output from the convolutional encoder on the Access Channel shall be repeated once (each code symbol occurs two consecutive times) as specified in 6.1.3.1.4.

6.1.3.2.5 Access Channel Interleaving

The repeated code symbols on the Access Channel shall be interleaved as specified in 6.1.3.1.5.

6.1.3.2.6 Access Channel Modulation

The Access Channel data shall be modulated as specified in 6.1.3.1.6.

6.1.3.2.7 Access Channel Gating

The mobile station shall not gate off any power control group while transmitting on the Access Channel as specified in 6.1.3.1.7.1.

6.1.3.2.8 Access Channel Direct Sequence Spreading

The Access Channel shall be spread by the long code as specified in 6.1.3.1.8.

6.1.3.2.9 Access Channel Quadrature Spreading

The Access Channel shall be quadrature spread by the pilot PN sequences as specified in 6.1.3.1.9.

6.1.3.2.10 Access Channel Baseband Filtering

The Access Channel shall be filtered as specified in 6.1.3.1.10.

6.1.3.3 Reverse Traffic Channel

The Reverse Traffic Channel is used for the transmission of user and signaling information to the base station during a call. The Reverse Traffic Channel contains one Reverse Fundamental Code Channel and may contain one to seven Reverse Supplemental Code Channels.

6.1.3.3.1 Reverse Traffic Channel Time Alignment and Modulation Rates

The mobile station shall transmit information on the Reverse Fundamental Code Channel of the Reverse Traffic Channel at variable data rates of 9600, 4800, 2400, and 1200 bps for Rate Set 1. If information or preamble is being transmitted on one or more Reverse Supplemental Code Channels, the mobile station shall transmit only at 9600 bps on the Reverse Fundamental Code Channel. When transmitting on Reverse Supplemental Code Channels, the mobile station shall transmit information on Reverse Supplemental Code Channel(s) at 9600 bps for Rate Set 1.

The mobile station may transmit information on the Fundamental Code Channel of the Reverse Traffic Channel at 14400, 7200, 3600, and 1800 bps for Rate Set 2. If information or preamble is being transmitted on one or more Reverse Supplemental Code Channels, the mobile station shall transmit only at 14400 bps on the Reverse Fundamental Code Channel. When transmitting on Reverse Supplemental Code Channels, the mobile station shall transmit information on Reverse Supplemental Code Channel(s) at 14400 bps for Rate Set 2.

The Reverse Traffic Channel frame shall be 20 ms in duration. When variable data rate transmission on a Fundamental Code Channel is indicated, the data rate within a rate set shall be selected on a frame-by-frame (i.e., 20 ms) basis.

The mobile station shall transmit Reverse Supplemental Code Channels within $3/8$ of a PN chip (305.1758 ns) of the Reverse Fundamental Code Channel.

A mobile station shall support Traffic Channel frames which are offset. The amount of time offset is specified by the FRAME_OFFSET parameter (see the *Channel Assignment Message* in 7.7.2.3.2.8, the *Extended Channel Assignment Message* in 7.7.2.3.2.19, the *General Handoff Direction Message* in 7.7.3.3.2.31, and the *Extended Handoff Direction Message* in

7.7.3.3.2.17).⁶ A zero-offset Reverse Traffic Channel frame shall begin only when System Time is an integral multiple of 20 ms (see Figure 1.2-1). An offset frame shall begin $1.25 \times \text{FRAME_OFFSET}$ ms later than the zero-offset Traffic Channel frame. The mobile station shall transmit frames on Supplemental Code Channels in time alignment with the Fundamental Code Channel (i.e., the same frame offset shall be applied to Supplemental Code Channels). The interleaver block for the Reverse Code Channels shall be aligned with the Reverse Traffic Channel frame.

6.1.3.3.2 Reverse Traffic Channel Frame Structure

Table 6.1.3.3.2-1 summarizes the Reverse Traffic Channel bit allocations.

Reverse Traffic Channel frames sent with Rate Set 1 at the 9600 bps transmission rate shall consist of 192 bits. These 192 bits shall be composed of 172 information bits followed by 12 frame quality indicator⁷ (CRC) bits and eight Encoder Tail Bits as shown in Figure 6.1.3.3.2-1.

Reverse Traffic Channel frames sent with Rate Set 1 at the 4800 bps transmission rate shall consist of 96 bits. These 96 bits shall be composed of 80 information bits followed by eight frame quality indicator (CRC) bits and eight Encoder Tail Bits as shown in Figure 6.1.3.3.2-1.

Reverse Traffic Channel frames sent with Rate Set 1 at the 2400 bps transmission rate shall consist of 48 bits. These 48 bits shall be composed of 40 information bits followed by eight Encoder Tail Bits as shown in Figure 6.1.3.3.2-1.

Reverse Traffic Channel frames sent with Rate Set 1 at the 1200 bps transmission rate shall consist of 24 bits. These 24 bits shall be composed of 16 information bits followed by eight Encoder Tail Bits as shown in Figure 6.1.3.3.2-1.

Reverse Traffic Channel frames sent with Rate Set 2 at the 14400 bps transmission rate shall consist of 288 bits. These 288 bits shall be composed of one Erasure Indicator bit followed by 267 information bits, 12 frame quality indicator (CRC) bits, and eight Encoder Tail Bits as shown in Figure 6.1.3.3.2-2.

Reverse Traffic Channel frames sent with Rate Set 2 at the 7200 bps transmission rate shall consist of 144 bits. These 144 bits shall be composed of one Erasure Indicator bit followed by 125 information bits, ten frame quality indicator (CRC) bits, and eight Encoder Tail Bits as shown in Figure 6.1.3.3.2-2.

Reverse Traffic Channel frames sent with Rate Set 2 at the 3600 bps transmission rate shall consist of 72 bits. These 72 bits shall be composed of one Erasure Indicator bit

⁶ The Reverse Traffic Channel time offset is the same as the Forward Traffic Channel time offset.

⁷ The frame quality indicator supports two functions at the receiver. The first function is to determine whether the frame is in error. The second function is to assist in the determination of the data rate of the received frame. Other parameters may be needed for rate determination in addition to the frame quality indicator, such as symbol error rate evaluated at the four data rates of the rate set.

1 followed by 55 information bits, eight frame quality indicator (CRC) bits, and eight Encoder
2 Tail Bits as shown in Figure 6.1.3.3.2-2.

3 Reverse Traffic Channel frames sent with Rate Set 2 at the 1800 bps transmission rate
4 shall consist of 36 bits. These 36 bits shall be composed of one Erasure Indicator bit
5 followed by 21 information bits, six frame quality indicator (CRC) bits, and eight Encoder
6 Tail Bits as shown in Figure 6.1.3.3.2-2.

7 The fundamental data block supplied by the multiplex option shall be transmitted on the
8 Fundamental Code Channel, and a supplemental data block, if supplied by the multiplex
9 option (see 6.1.3.3.13 and 6.1.3.3.14), shall be transmitted on a Supplemental Code
10 Channel.

11
12 **Table 6.1.3.3.2-1. Reverse Traffic Channel Frame Structure Summary**

| Rate Set | Transmission Rate (bps) | Number of Bits per Frame | | | | |
|---|-------------------------|--------------------------|-------------------|-------------|-------------------------|--------------|
| | | Total | Erasure Indicator | Information | Frame Quality Indicator | Encoder Tail |
| 1 | 9600 | 192 | 0 | 172 | 12 | 8 |
| | 4800* | 96 | 0 | 80 | 8 | 8 |
| | 2400* | 48 | 0 | 40 | 0 | 8 |
| | 1200* | 24 | 0 | 16 | 0 | 8 |
| 2 | 14400 | 288 | 1 | 267 | 12 | 8 |
| | 7200* | 144 | 1 | 125 | 10 | 8 |
| | 3600* | 72 | 1 | 55 | 8 | 8 |
| | 1800* | 36 | 1 | 21 | 6 | 8 |
| * Applicable to Reverse Fundamental Code Channel only; not permitted on Reverse Supplemental Code Channels. | | | | | | |

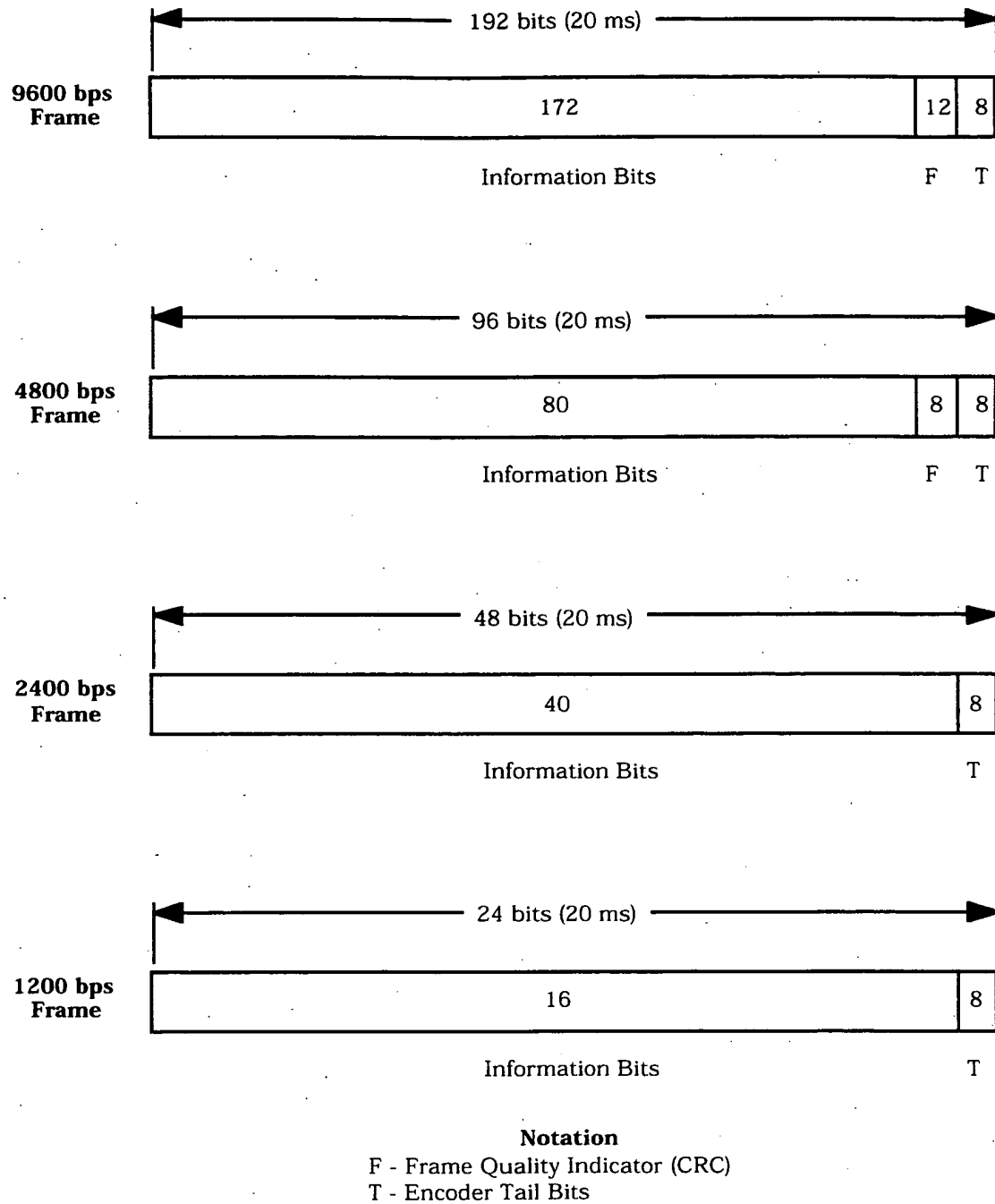


Figure 6.1.3.3.2-1. Reverse Traffic Channel Frame Structure for Rate Set 1

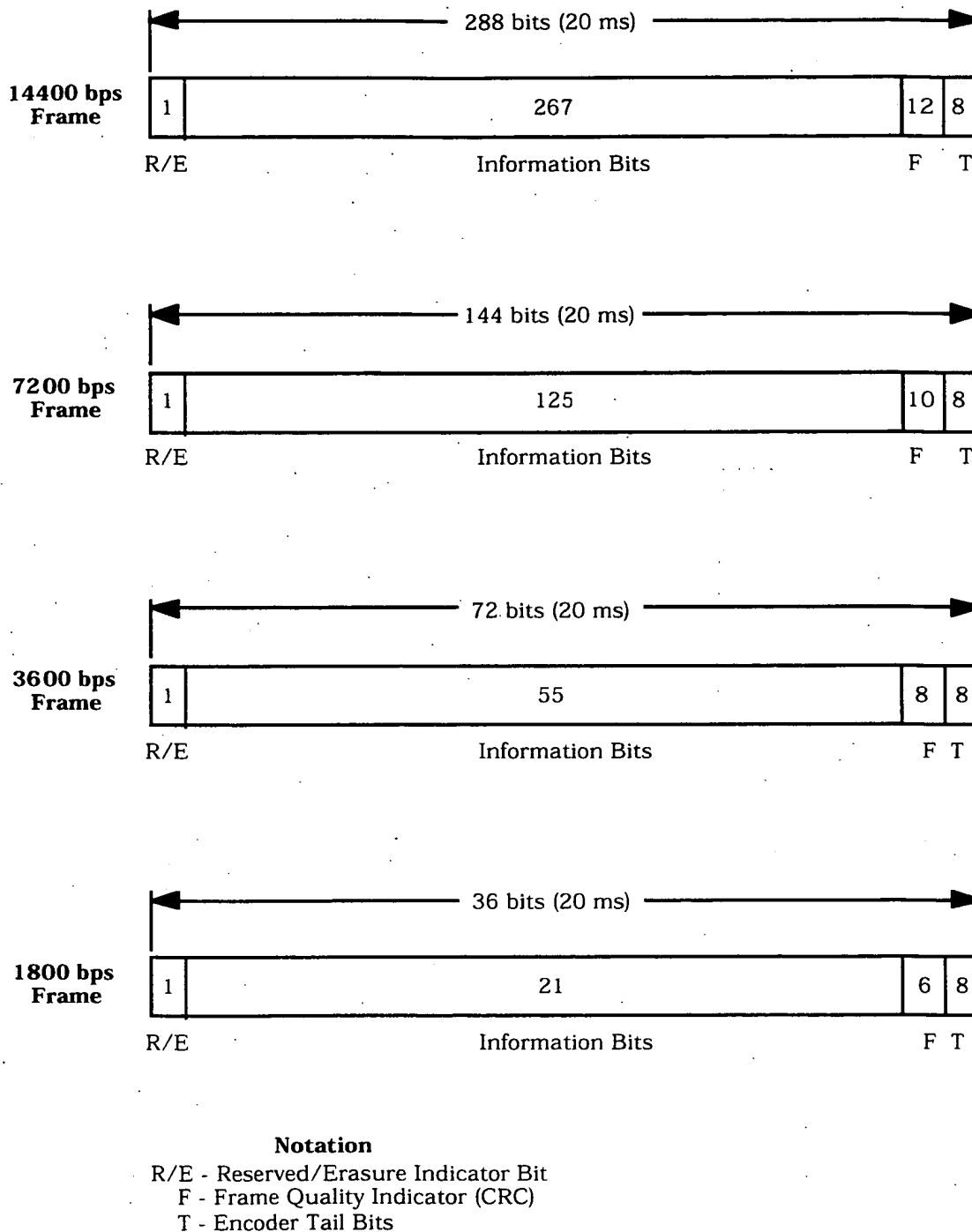


Figure 6.1.3.3.2-2. Reverse Traffic Channel Frame Structure for Rate Set 2

6.1.3.3.2.1 Reverse Traffic Channel Frame Quality Indicator

Each frame with Rate Set 2 and the 9600 and 4800 bps frames of Rate Set 1 shall include a frame quality indicator. This frame quality indicator is a CRC. No frame quality indicator is used for the 2400 and 1200 bps transmission rates of Rate Set 1.

The frame quality indicator (CRC) shall be calculated on all bits within the frame, except the frame quality indicator itself and the Encoder Tail Bits. The 9600 bps transmissions with Rate Set 1 and the 14400 bps transmissions with Rate Set 2 shall use a 12-bit frame quality indicator. The 7200 bps transmissions with Rate Set 2 shall use a 10-bit frame quality indicator.

The 4800 bps transmissions with Rate Set 1 and the 3600 bps transmissions with Rate Set 2 shall use an 8-bit frame quality indicator. The 1800 bps transmissions with Rate Set 2 shall use a 6-bit frame quality indicator.

The generator polynomials for the frame quality indicator shall be as follows:

$$g(x) = x^{12} + x^{11} + x^{10} + x^9 + x^8 + x^4 + x + 1 \text{ for the 12-bit frame quality indicator,}$$

$$g(x) = x^{10} + x^9 + x^8 + x^7 + x^6 + x^4 + x^3 + 1 \text{ for the 10-bit frame quality indicator,}$$

$$g(x) = x^8 + x^7 + x^4 + x^3 + x + 1 \text{ for the 8-bit frame quality indicator, and}$$

$$g(x) = x^6 + x^2 + x + 1 \text{ for the 6-bit frame quality indicator.}$$

The frame quality indicators shall be computed according to the following procedure using the logic shown in Figures 6.1.3.3.2.1-1 through 6.1.3.3.2.1-4:

- Initially, all shift register elements shall be set to logical one and the switches shall be set in the up position.
- The register shall be clocked a number of times equal to the number of Erasure Indicators and information bits in the frame with those bits as input. For Rate Set 1, where the frame quality indicator is used, the number of information bits per frame is 172 and 80 for the 9600 and 4800 bps transmission rates, respectively. For Rate Set 2, the number of Erasure Indicator and information bits per frame is 268, 126, 56, and 22 for the 14400, 7200, 3600, and 1800 bps transmission rates, respectively.
- The switches shall be set in the down position so that the output is a modulo-2 addition with a '0' and the successive shift register inputs are '0'.
- The register shall be clocked an additional number of times equal to the number of bits in the frame quality indicator (i.e., 12, 10, 8, or 6).
- These additional bits shall be the frame quality indicator bits.
- The bits shall be transmitted in the order calculated.

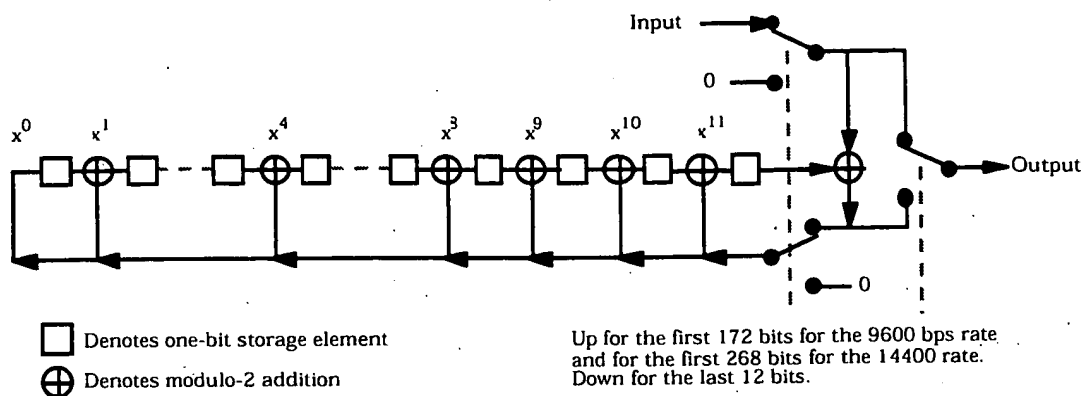


Figure 6.1.3.3.2.1-1. Reverse Traffic Channel Frame Quality Indicator Calculation for the 12-Bit Frame Quality Indicator

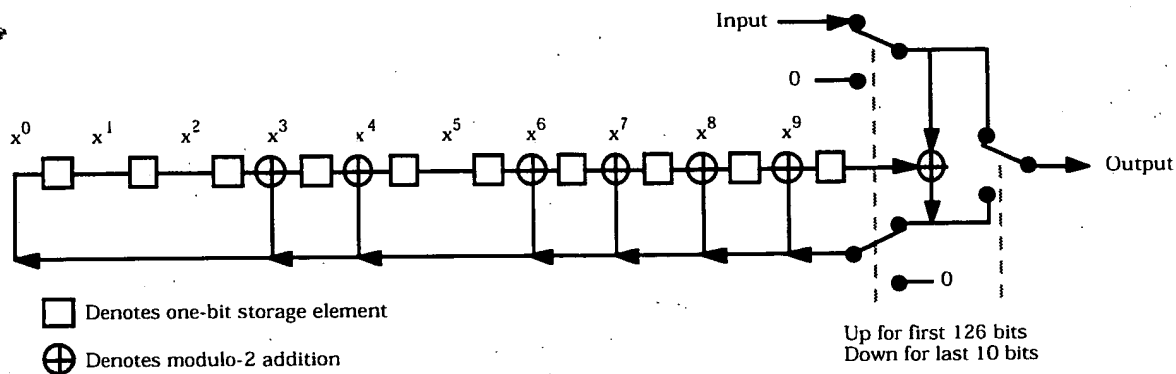


Figure 6.1.3.3.2.1-2. Reverse Traffic Channel Frame Quality Indicator Calculation for the 10-Bit Frame Quality Indicator

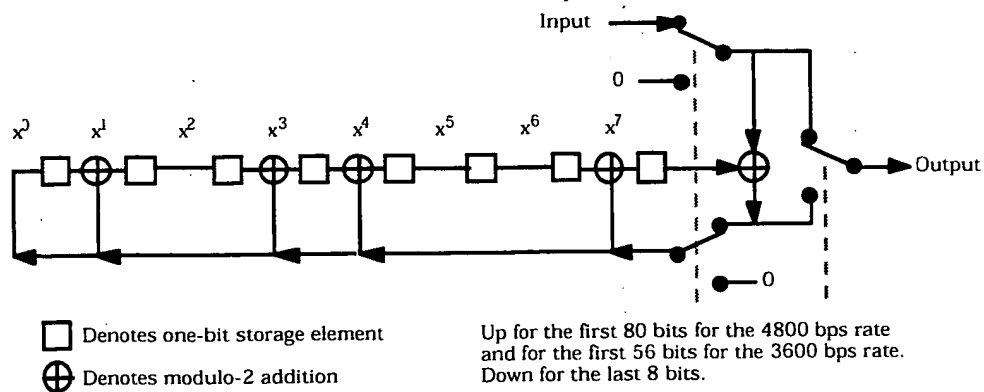


Figure 6.1.3.3.2.1-3. Reverse Traffic Channel Frame Quality Indicator Calculation for the 8-Bit Frame Quality Indicator

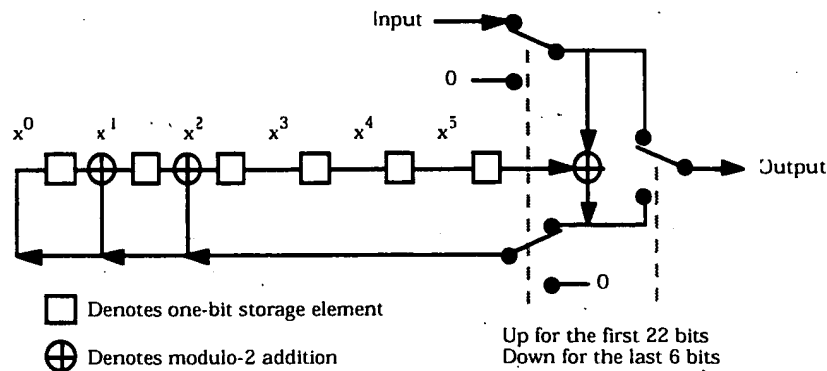


Figure 6.1.3.3.2.1-4. Reverse Traffic Channel Frame Quality Indicator Calculation for the 6-Bit Frame Quality Indicator

6.1.3.3.2.2 Reverse Traffic Channel Encoder Tail Bits

The last eight bits of each Reverse Traffic Channel frame are called the Encoder Tail Bits. These eight bits shall be set to '0'.

6.1.3.3.2.3 Traffic Channel Preamble

The Traffic Channel preamble shall consist of a frame of all zeros that is transmitted with a 100% transmission duty cycle. The Traffic Channel preamble shall not include the frame quality indicator. For Rate Set 1, the Traffic Channel preamble shall consist of 192 zeros that are transmitted at the 9600 bps rate. For Rate Set 2, the Traffic Channel preamble shall consist of 288 zeros that are transmitted at the 14400 bps rate.

The Traffic Channel preamble is transmitted on the Reverse Fundamental Code Channel to aid the base station in performing acquisition of the Reverse Traffic Channel.

6.1.3.3.2.3.1 Reverse Supplemental Code Channel Preamble

The mobile station shall transmit the Supplemental Code Channel preamble on each Reverse Supplemental Code Channel at the beginning of transmission on Reverse Supplemental Code Channels.

The Supplemental Code Channel preamble shall consist of $BEGIN_PREAMBLE_S$ frames of all zeros that are transmitted with a 100% transmission duty cycle. The $BEGIN_PREAMBLE$ parameter may be set by the base station in an *In-Traffic System Parameters Message*, the *General Handoff Direction Message*, or the *Supplemental Channel Assignment Message*. The Supplemental Code Channel preamble shall not include the frame quality indicator. For Rate Set 1, each frame of the Reverse Supplemental Code Channel preamble shall consist of 192 zeros that are transmitted at the 9600 bps rate. For Rate Set 2, each frame of the Reverse Supplemental Code Channel preamble shall consist of 288 zeros that are transmitted at the 14400 bps rate.

6.1.3.3.2.3.2 Reverse Supplemental Code Channel Discontinuous Transmission Preamble

If the currently connected service option permits discontinuous Reverse Supplemental Code Channel transmission, then the mobile station may resume transmission following a break in Reverse Supplemental Code Channel transmission. When transmission on a Reverse Supplemental Code Channel is resumed, the mobile station shall transmit the Discontinuous Transmission preamble. The Supplemental Code Channel Discontinuous Transmission preamble shall not be transmitted by the mobile station at the beginning of transmission on Reverse Supplemental Code Channels following a Reverse Supplemental Code Channel assignment (see 6.1.3.3.2.3.1).

The Supplemental Code Channel Discontinuous Transmission preamble shall consist of RESUME_PREAMBLE_s frames of all zeros that are transmitted with a 100% transmission duty cycle. The RESUME_PREAMBLE_s parameter may be set by the base station in an *In-Traffic System Parameters Message*, *General Handoff Direction Message*, or *Supplemental Channel Assignment Message*. The Supplemental Code Channel Discontinuous Transmission preamble shall not include the frame quality indicator. For Rate Set 1, each frame of the Reverse Supplemental Code Channel preamble shall consist of 192 zeros that are transmitted at the 9600 bps rate. For Rate Set 2, each frame of the Reverse Supplemental Code Channel Discontinuous Transmission preamble shall consist of 288 zeros that are transmitted at the 14400 bps rate.

6.1.3.3.2.4 Reserved

6.1.3.3.3 Reverse Traffic Channel Convolutional Encoding

The Fundamental and Supplemental Code Channels of the Reverse Traffic Channel data shall be convolutionally encoded as specified in 6.1.3.1.3.

When generating Reverse Traffic Channel data, the encoder shall be initialized (see 6.1.3.1.3) at the end of each 20 ms frame.

6.1.3.3.4 Reverse Traffic Channel Code Symbol Repetition

Fundamental Code Channel code symbol repetition shall be as specified in 6.1.3.1.4.

6.1.3.3.5 Reverse Traffic Channel Interleaving

The code symbols on the Fundamental and Supplemental Code Channels of the Reverse Traffic Channel shall be interleaved as specified in 6.1.3.1.5.

6.1.3.3.6 Reverse Traffic Channel Modulation

The Fundamental and Supplemental Code Channels of the Reverse Traffic Channel data shall be modulated as specified in 6.1.3.1.6.

6.1.3.3.7 Reverse Traffic Channel Gating

The mobile station shall perform the data burst randomizing function as specified in 6.1.3.1.7 while transmitting on the Reverse Fundamental Code Channel.

1 6.1.3.3.8 Reverse Traffic Channel Direct Sequence Spreading

2 The Fundamental and Supplemental Code Channels of the Reverse Traffic Channel shall be
3 spread by the long code as specified in 6.1.3.1.8.

4 6.1.3.3.9 Reverse Traffic Channel Quadrature Spreading

5 The Fundamental and Supplemental Code Channels of the Reverse Traffic Channel shall be
6 quadrature spread by the pilot PN sequences as specified in 6.1.3.1.9.

7 6.1.3.3.10 Reverse Traffic Channel Baseband Filtering

8 The Reverse Traffic Channel shall be filtered as specified in 6.1.3.1.10.

9 6.1.3.3.11 Multiplex Option 1 Information

10 Multiplex Option 1 applies to Rate Set 1. It provides for the transmission of primary traffic
11 and either signaling or secondary traffic. Signaling traffic may be transmitted via blank-
12 and-burst with the signaling traffic using all of the frame or via dim-and-burst with the
13 primary traffic and signaling traffic sharing the frame. Multiplex Option 1 also supports
14 the transmission of secondary traffic. When primary traffic is available, secondary traffic is
15 transmitted via dim-and-burst with the primary traffic and secondary traffic sharing the
16 frame. When primary traffic is not available, secondary traffic is transmitted via blank-
17 and-burst with the secondary traffic using all of the frame. The information bit structures
18 for primary and signaling traffic are specified in 6.1.3.3.11.1; the information bit structures
19 for secondary traffic are specified in 6.1.3.3.11.2. Table 6.1.3.3.11-1 shows the information
20 bit structures supported by Multiplex Option 1.

21 The mobile station shall support Multiplex Option 1. The mobile station shall support the
22 transmission of primary traffic and signaling traffic using the information bit structures
23 specified in 6.1.3.3.11.1. The mobile station may support secondary traffic, and if so, the
24 mobile station shall also use the information bit structures specified in 6.1.3.3.11.2.

25

Table 6.1.3.3.11-1. Reverse Traffic Channel Information Bits for Multiplex Option 1

| Transmit Rate (bits/sec) | Format Bits | | | Primary Traffic (bits/frame) | Signaling Traffic (bits/frame) | Secondary Traffic (bits/frame) |
|---|--------------------|----------------------|----------------------|---------------------------------|-----------------------------------|-----------------------------------|
| | Mixed Mode (MM) | Traffic Type (TT) | Traffic Mode (TM) | | | |
| 9600 | '0' | - | - | 171 | 0 | 0 |
| | '1' | '0' | '00' | 80 | 88 | 0 |
| | '1' | '0' | '01' | 40 | 128 | 0 |
| | '1' | '0' | '10' | 16 | 152 | 0 |
| | '1' | '0' | '11' | 0 | 168 | 0 |
| | * '1' | '1' | '00' | 80 | 0 | 88 |
| | * '1' | '1' | '01' | 40 | 0 | 128 |
| | * '1' | '1' | '10' | 16 | 0 | 152 |
| | * '1' | '1' | '11' | 0 | 0 | 168 |
| 4800 | - | - | - | 80 | 0 | 0 |
| 2400 | - | - | - | 40 | 0 | 0 |
| 1200 | - | - | - | 16 | 0 | 0 |
| Note: Mobile station support of the secondary traffic structures, marked with *, is optional. | | | | | | |

6.1.3.3.11.1 Primary and Signaling Traffic with Multiplex Option 1

The mobile station shall support the information bit structures described in Table 6.1.3.3.11-1 and Figure 6.1.3.3.11.1-1.

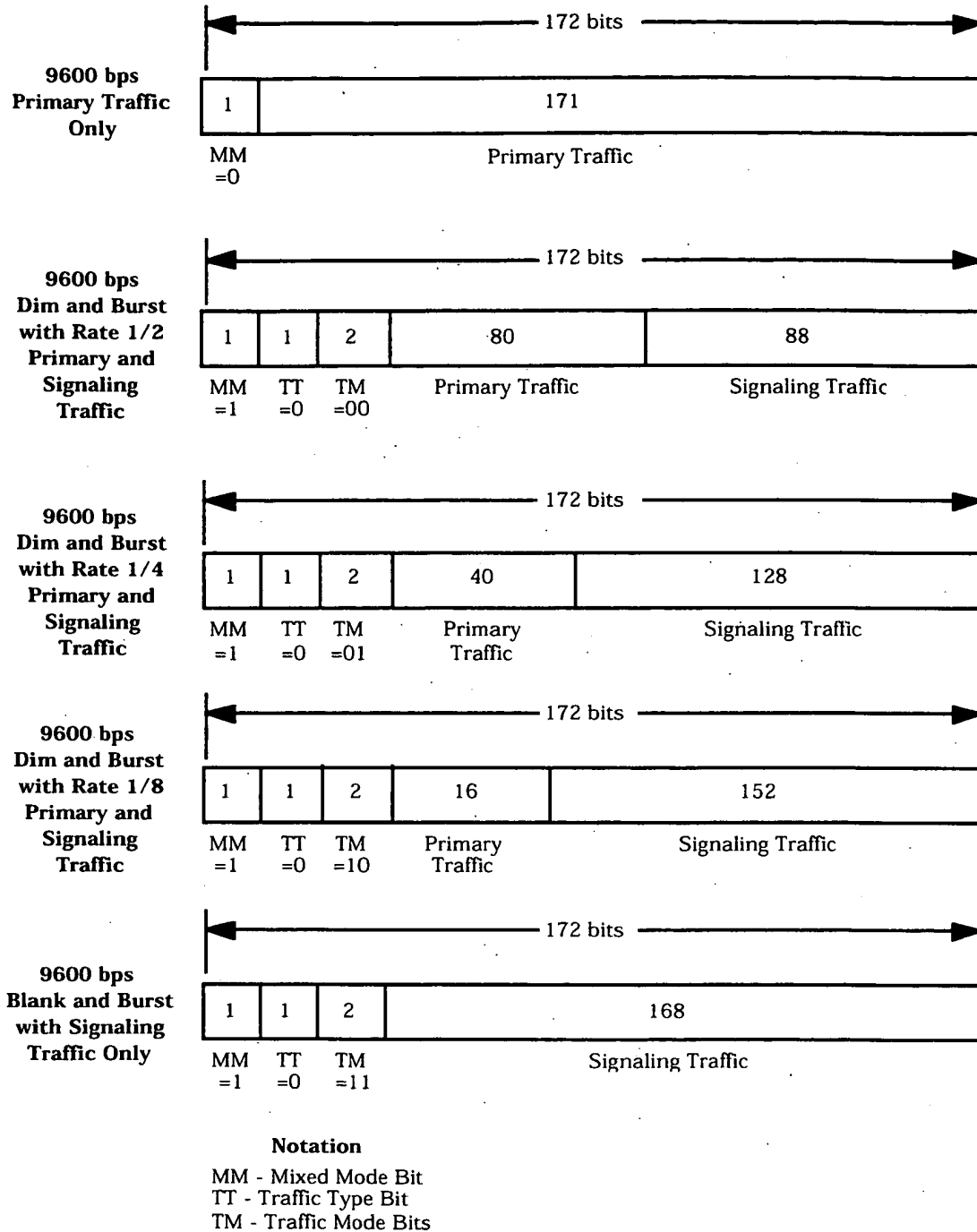


Figure 6.1.3.3.11.1-1. Information Bits for Primary Traffic and Signaling Traffic for Multiplex Option 1 (Part 1 of 2)

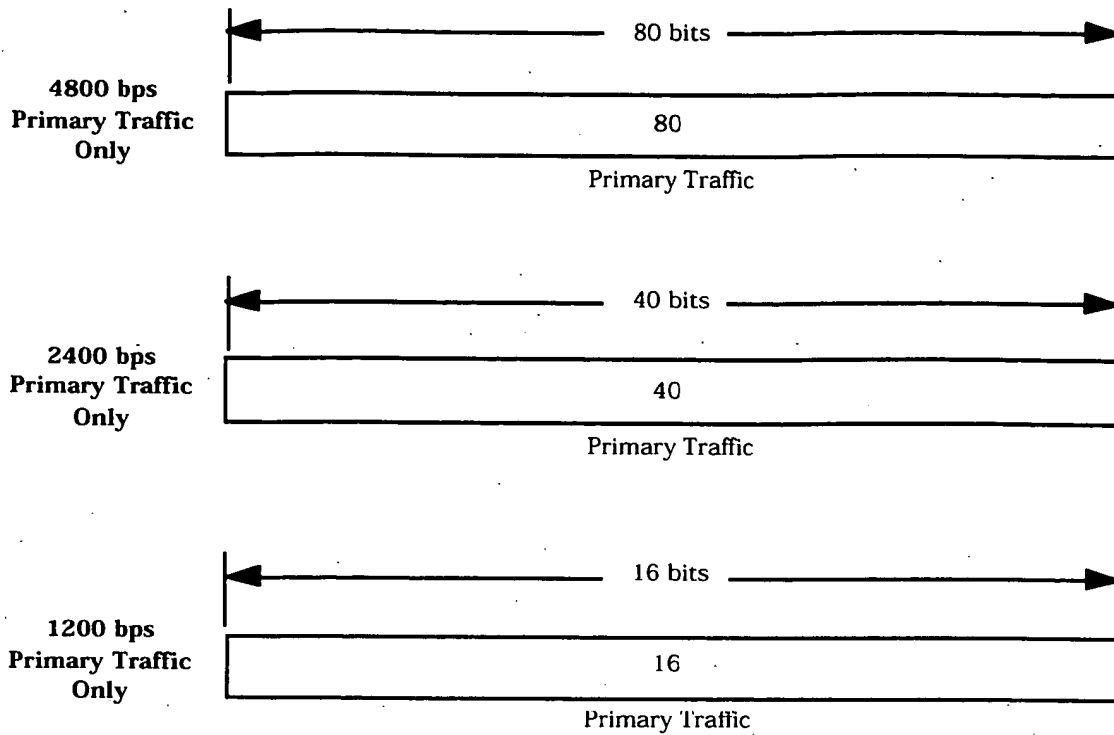


Figure 6.1.3.3.11.1-1. Information Bits for Primary Traffic and Signaling Traffic for Multiplex Option 1 (Part 2 of 2)

6.1.3.3.11.2 Secondary Traffic with Multiplex Option 1

If the mobile station supports secondary traffic, the mobile station shall use the information bit structures described in Table 6.1.3.3.11-1 and Figure 6.1.3.3.11.2-1.

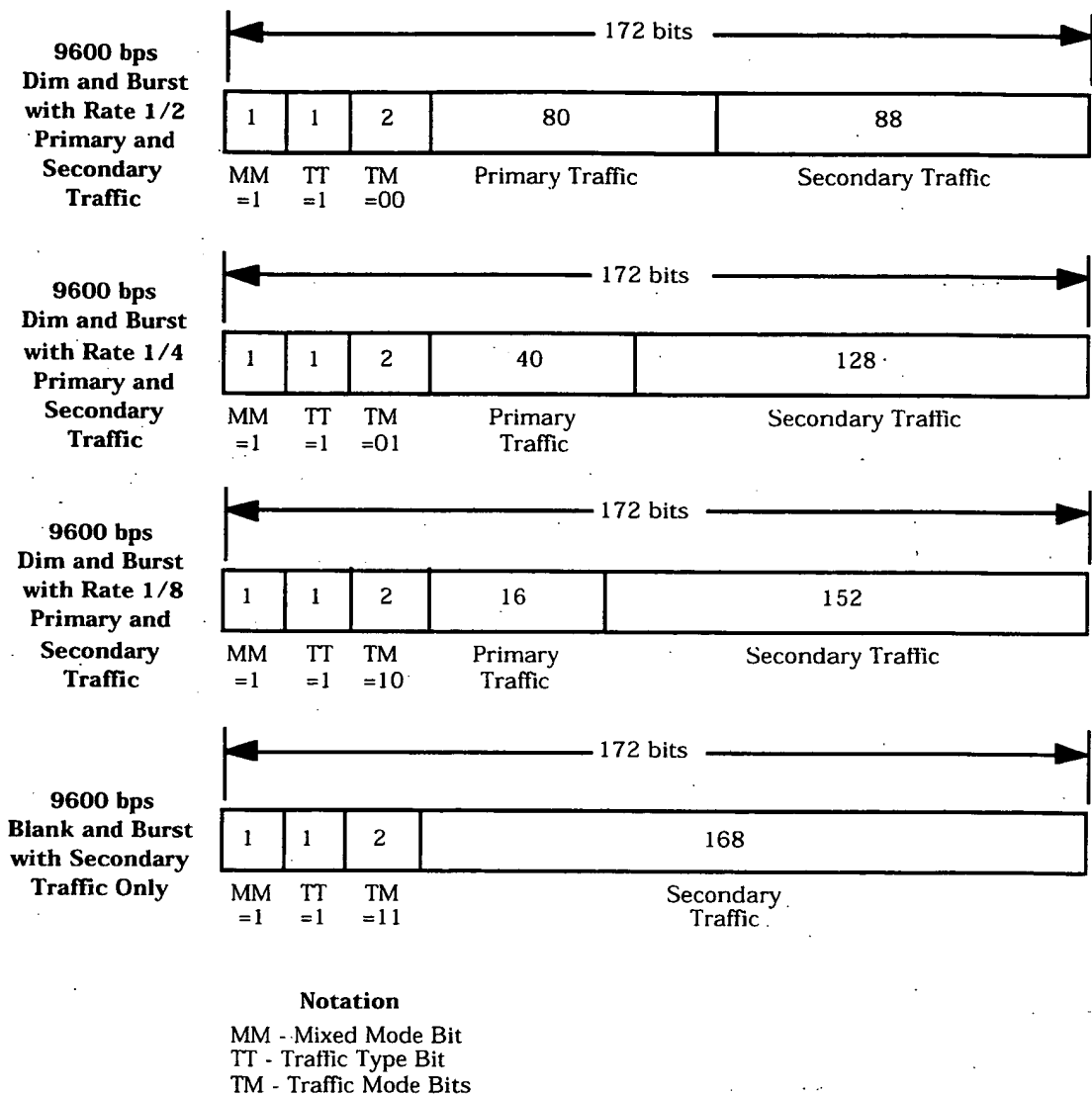


Figure 6.1.3.3.11.2-1. Information Bits for Secondary Traffic for Multiplex Option 1

6.1.3.3.11.3 Use of Various Information Bit Formats for Multiplex Option 1

When neither primary traffic nor secondary traffic is available, the mobile station shall transmit signaling traffic using only blank-and-burst frames. When not transmitting signaling traffic, the mobile station shall transmit only null Traffic Channel data (see 6.1.3.3.11.5).

When primary traffic is available and secondary traffic is not available, the mobile station shall use the information formats specified in 6.1.3.3.11.1. The mobile station should use the dim-and-burst information formats specified in 6.1.3.3.11.1 for signaling traffic.

When primary traffic is not available and secondary traffic is available, the mobile station shall use the information formats specified in 6.1.3.3.11.2 to transmit secondary traffic. The mobile station shall use the blank-and-burst format specified in 6.1.3.3.11.1 for signaling traffic. The mobile station shall transmit null Traffic Channel data when neither secondary traffic nor signaling traffic is available.

When both primary traffic and secondary traffic are available, the mobile station shall use the information formats specified in 6.1.3.3.11.1 and 6.1.3.3.11.2. The mobile station shall not transmit null Traffic Channel data. The mobile station should use the dim-and-burst information formats specified in 6.1.3.3.11.1 for signaling traffic.

6.1.3.3.11.4 Control of Service Options for Multiplex Option 1

Multiplex Option 1 controls the number of bits that the service option supplies for a frame.

The mobile station shall use the following rules when primary traffic is available: If signaling traffic is to be transmitted in a frame, Multiplex Option 1 shall either restrict primary traffic to zero bits (for a blank-and-burst frame) or to less than 171 bits (for a dim-and-burst frame). If secondary traffic is to be transmitted in a frame, Multiplex Option 1 may restrict primary traffic to less than 171 bits but shall allow primary traffic at least 16 bits for the frame. In all other cases, Multiplex Option 1 shall allow primary traffic at either 16, 40, 80, or 171 bits for a frame.

6.1.3.3.11.5 Null Traffic Channel Data

Null Traffic Channel data shall consist of primary traffic only frames, sent at the lowest negotiated transmission rate, with all primary traffic bits set equal to '1'.

The mobile station transmits null Traffic Channel data when there is no primary, no secondary, and no signaling traffic available. Null Traffic Channel data serves as a "keep-alive" operation so that the base station can maintain connectivity with the mobile station.

6.1.3.3.12 Multiplex Option 2 Information

Multiplex Option 2 applies to Rate Set 2. It provides for the transmission of primary traffic, secondary traffic, and signaling traffic. Signaling traffic may be transmitted via blank-and-burst with the signaling traffic using all of the frame, via dim-and-burst with the primary traffic and signaling traffic sharing the frame, or via dim-and-burst with the primary traffic, secondary traffic, and signaling traffic sharing the same frame. When primary traffic is available, secondary traffic is transmitted via dim-and-burst with the primary traffic,

1 secondary traffic, and possibly signaling traffic sharing the frame. When primary traffic is
2 not available, secondary traffic is transmitted via blank-and-burst with the secondary
3 traffic using all of the frame. The information bit structures for primary and signaling
4 traffic are specified in 6.1.3.3.12.1; the information bit structures for secondary traffic are
5 specified in 6.1.3.3.12.2. Table 6.1.3.3.12-1 shows the information bit structures
6 supported by Multiplex Option 2.

7 The mobile station may support Multiplex Option 2. If the mobile station supports
8 Multiplex Option 2 it shall support the transmission of primary traffic and signaling traffic
9 using the information bit structures specified in 6.1.3.3.12.1. The mobile station may
10 support secondary traffic; and, if so, the mobile station shall also use the information bit
11 structures specified in 6.1.3.3.12.2.

Table 6.1.3.3.12-1. Reverse Traffic Channel Information Bits for Multiplex Option 2

| Transmit Rate (bits/sec) | Format Bits | | Primary Traffic (bits/frame) | Signaling Traffic (bits/frame) | Secondary Traffic (bits/frame) |
|---|-----------------------|-----------------------|------------------------------------|--------------------------------------|--------------------------------------|
| | Mixed Mode (MM) | Frame Mode (FM) | | | |
| 14400 | '0' | - | 266 | 0 | 0 |
| | '1' | '0000' | 124 | 138 | 0 |
| | '1' | '0001' | 54 | 208 | 0 |
| | '1' | '0010' | 20 | 242 | 0 |
| | '1' | '0011' | 0 | 262 | 0 |
| | * '1' | '0100' | 124 | 0 | 138 |
| | * '1' | '0101' | 54 | 0 | 208 |
| | * '1' | '0110' | 20 | 0 | 242 |
| | * '1' | '0111' | 0 | 0 | 262 |
| | * '1' | '1000' | 20 | 222 | 20 |
| 7200 | '0' | - | 124 | 0 | 0 |
| | '1' | '000' | 54 | 67 | 0 |
| | '1' | '001' | 20 | 101 | 0 |
| | '1' | '010' | 0 | 121 | 0 |
| | * '1' | '011' | 54 | 0 | 67 |
| | * '1' | '100' | 20 | 0 | 101 |
| | * '1' | '101' | 0 | 0 | 121 |
| | * '1' | '110' | 20 | 81 | 20 |
| 3600 | '0' | - | 54 | 0 | 0 |
| | '1' | '00' | 20 | 32 | 0 |
| | '1' | '01' | 0 | 52 | 0 |
| | * '1' | '10' | 20 | 0 | 32 |
| | * '1' | '11' | 0 | 0 | 52 |
| 1800 | '0' | - | 20 | 0 | 0 |
| | * '1' | - | 0 | 0 | 20 |
| Note: Mobile station support of the secondary traffic structures, marked with *, is optional. | | | | | |

1 6.1.3.3.12.1 Primary and Signaling Traffic with Multiplex Option 2

2 If the mobile station supports Multiplex Option 2, the mobile station shall use the
3 information bit structures described in Table 6.1.3.3.12-1 and Figure 6.1.3.3.12.1-1.

4 6.1.3.3.12.2 Secondary Traffic with Multiplex Option 2

5 If the mobile station supports Multiplex Option 2 and secondary traffic, the mobile station
6 shall use the information bit structures described in Table 6.1.3.3.12-1 and
7 Figure 6.1.3.3.12.2-1.

8

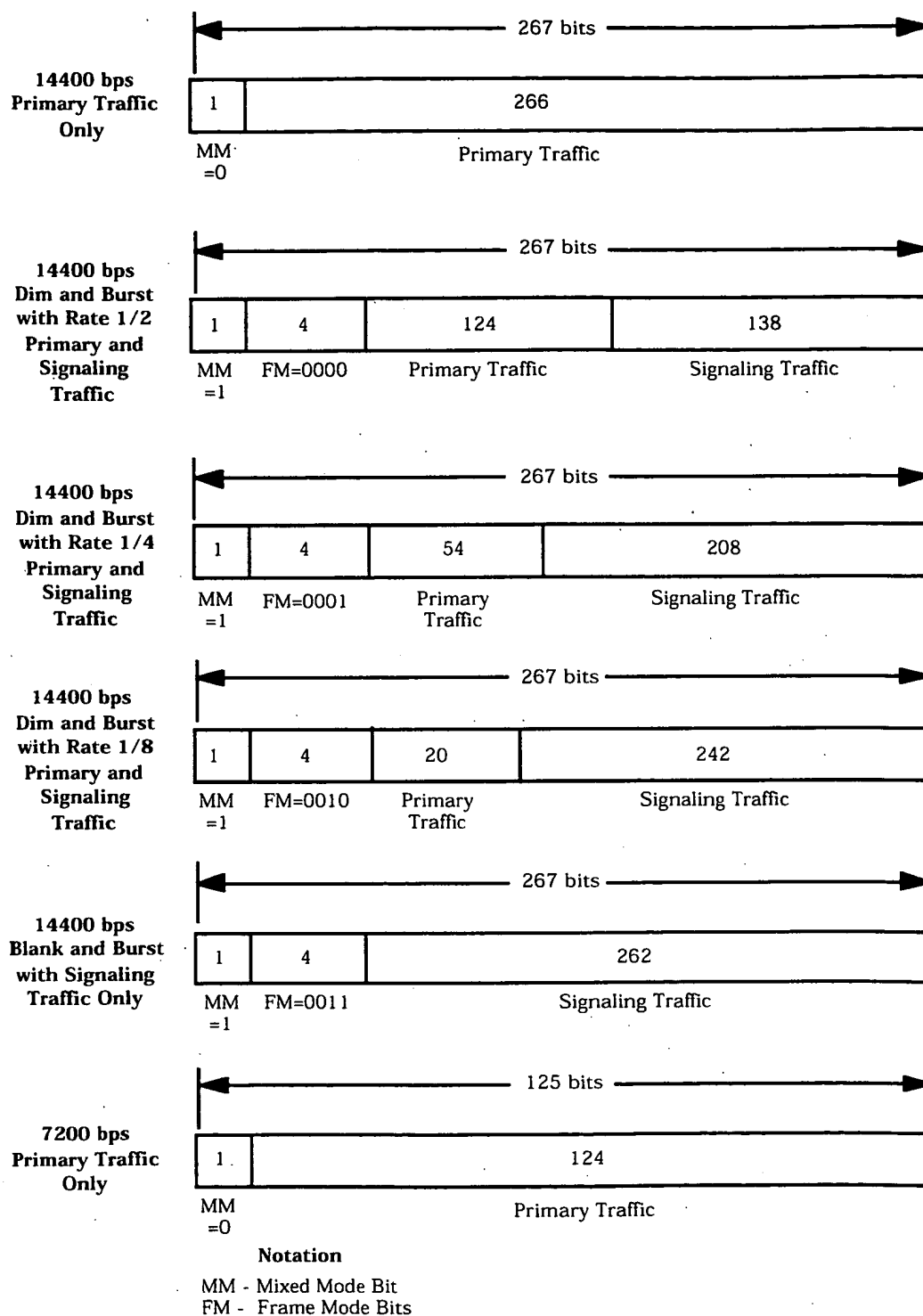


Figure 6.1.3.3.12.1-1. Information Bits for Primary Traffic and Signaling Traffic for Multiplex Option 2 (Part 1 of 2)

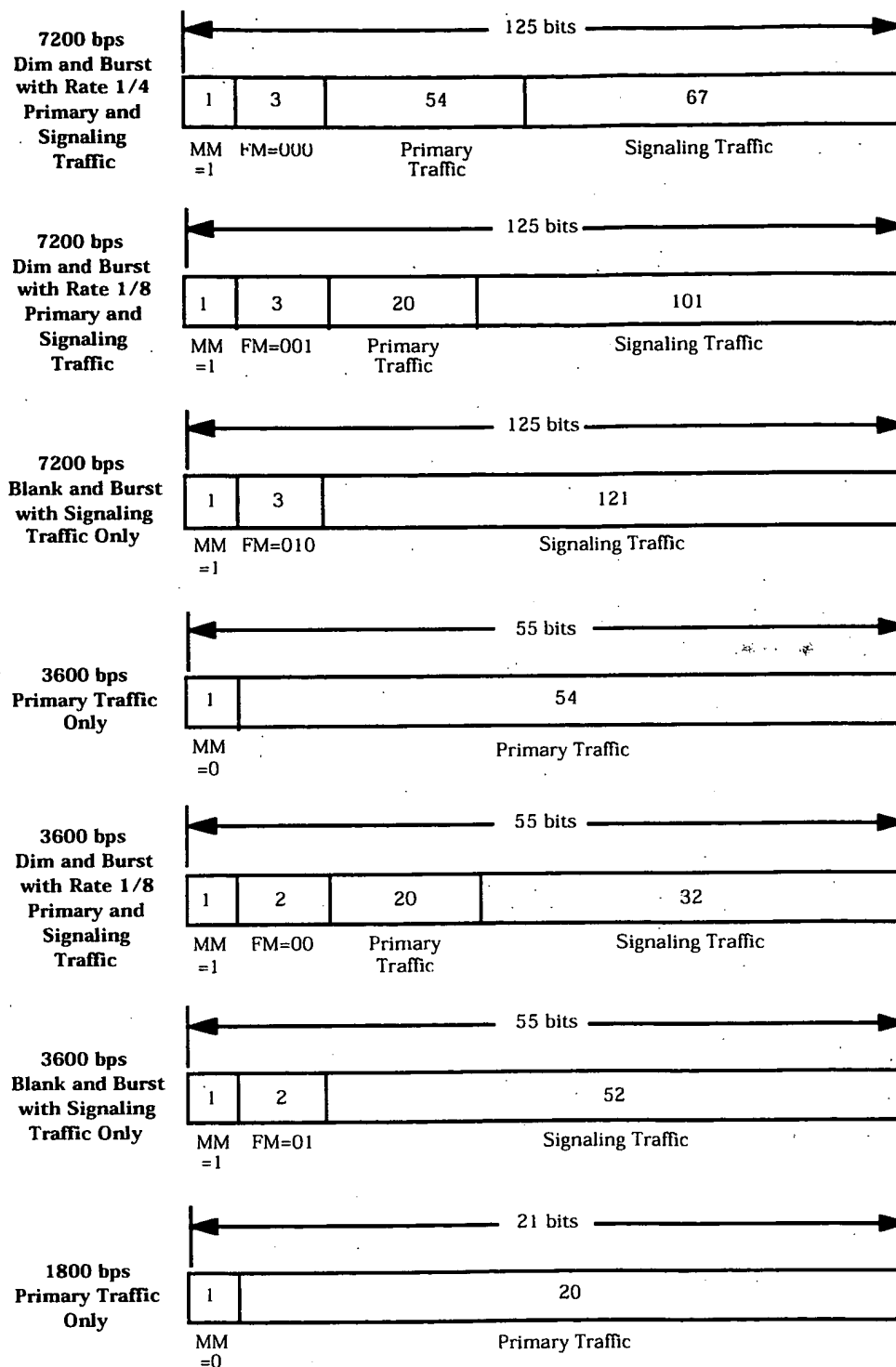


Figure 6.1.3.3.12.1-1. Information Bits for Primary Traffic and Signaling Traffic for Multiplex Option 2 (Part 2 of 2)

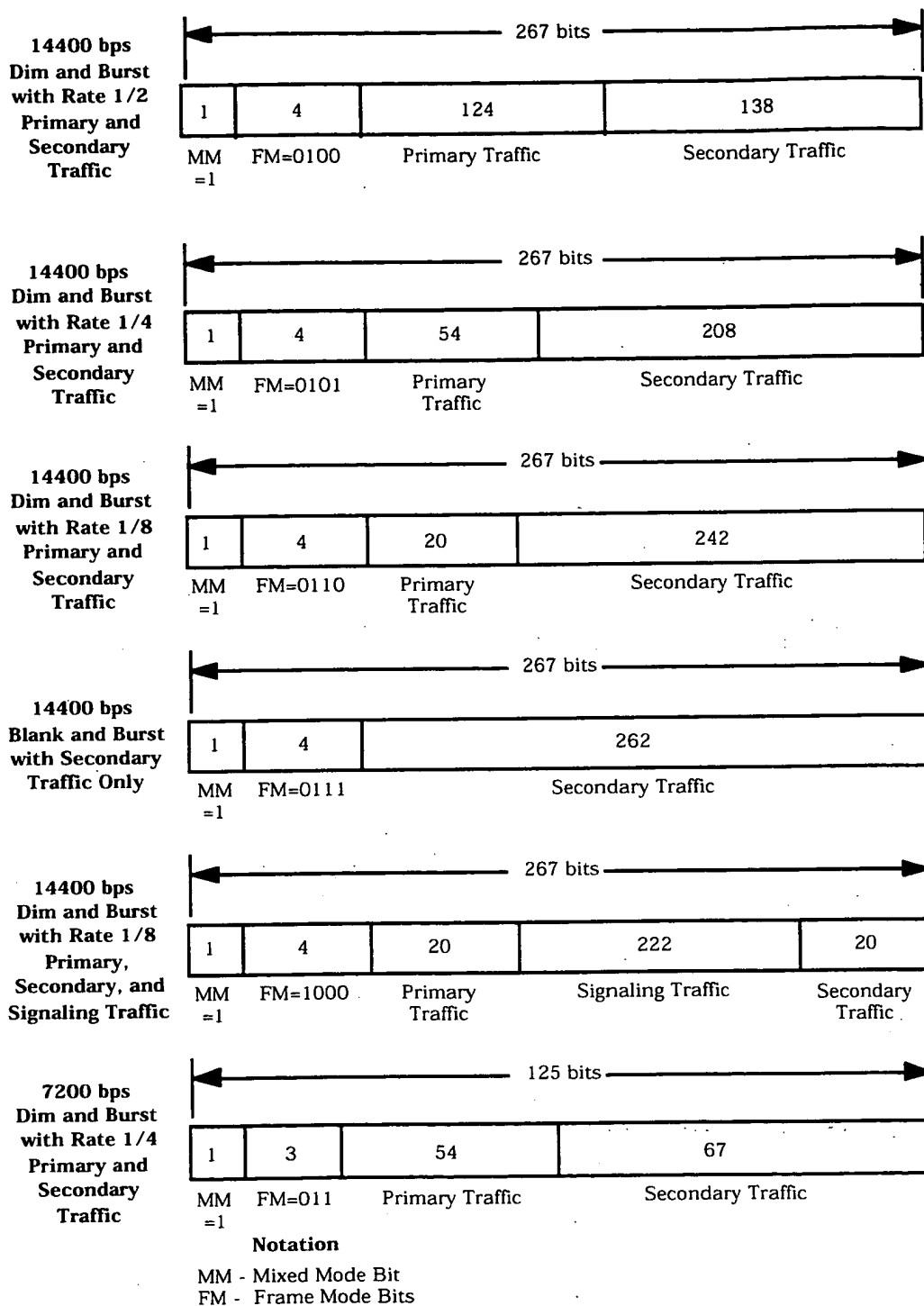


Figure 6.1.3.3.12.2-1. Information Bits for Secondary Traffic for Multiplex Option 2
(Part 1 of 2)

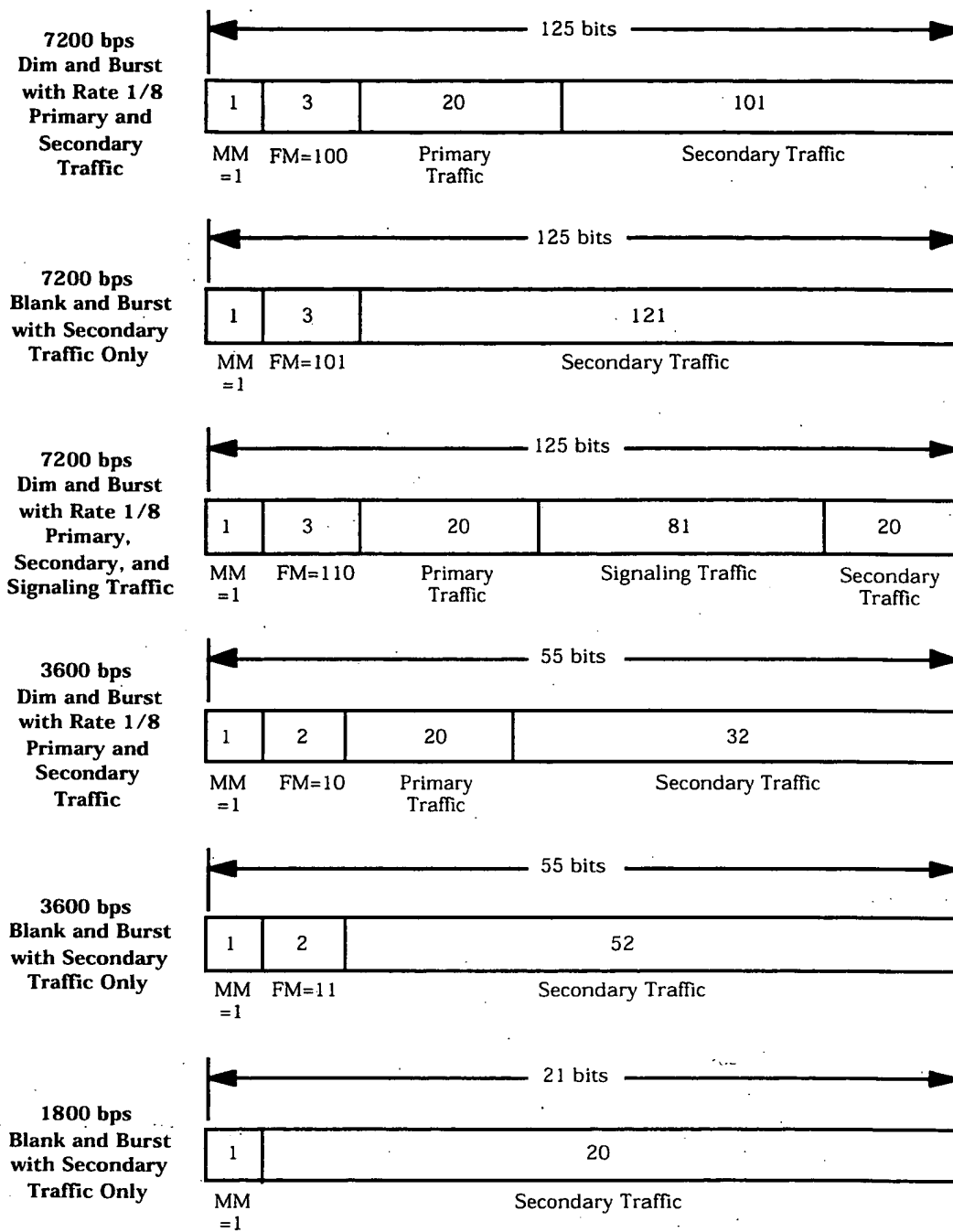


Figure 6.1.3.3.12.2-1. Information Bits for Secondary Traffic for Multiplex Option 2
(Part 2 of 2)

6.1.3.3.12.3 Use of Various Information Bit Formats for Multiplex Option 2

When neither primary traffic nor secondary traffic is available, the mobile station shall transmit signaling traffic using only blank-and-burst frames. When not transmitting signaling traffic, the mobile station shall transmit only null Traffic Channel data (see 6.1.3.3.12.5).

When primary traffic is available and secondary traffic is not available, the mobile station shall use the information formats specified in 6.1.3.3.12.1. The mobile station should use the dim-and-burst information formats specified in 6.1.3.3.12.1 for signaling traffic.

When primary traffic is not available and secondary traffic is available, the mobile station shall use the information formats specified in 6.1.3.3.12.2 to transmit secondary traffic. The mobile station shall use the blank-and-burst formats specified in 6.1.3.3.12.1 for signaling traffic. The mobile station shall transmit null Traffic Channel data when neither secondary traffic nor signaling traffic is available.

When both primary traffic and secondary traffic are available, the mobile station shall use the information formats specified in 6.1.3.3.12.1 and 6.1.3.3.12.2. The mobile station shall not transmit null Traffic Channel data. The mobile station should use the dim-and-burst information formats specified in 6.1.3.3.12.2 for signaling traffic.

6.1.3.3.12.4 Control of Service Options for Multiplex Option 2

Multiplex Option 2 controls the number of bits that the service option supplies for a frame. The mobile station shall use the following rules when primary traffic is available: If signaling traffic is to be transmitted in a frame, Multiplex Option 2 shall either restrict primary traffic to zero bits (for a blank-and-burst frame) or to less than 266 bits (for a dim-and-burst frame). If secondary traffic is to be transmitted in a frame, Multiplex Option 2 may restrict primary traffic to less than 266 bits but shall allow primary traffic at least 20 bits for the frame. In all other cases, Multiplex Option 2 shall allow primary traffic either 20, 54, 124, or 266 bits for a frame.

6.1.3.3.12.5 Null Traffic Channel Data

Null Traffic Channel data shall consist of frames containing primary traffic only, sent at the lowest negotiated transmission rate, with all primary traffic bits set equal to '1'.

The mobile station transmits null Traffic Channel data when there is no primary, no secondary, and no signaling traffic available. Null Traffic Channel data serves as a "keep-alive" operation so that the base station can maintain connectivity with the mobile station.

6.1.3.3.13 Multiplex Options 3, 5, 7, 9, 11, 13, and 15 Information

Multiplex Options 3, 5, 7, 9, 11, 13, and 15 apply to Rate Set 1. Multiplex Options $2n + 1$, $n = 1$ to 7, provide one fundamental data block and up to n supplemental data blocks to the Reverse Traffic Channel per 20 ms, as shown in Table 6.1.3.3.13-1.

Table 6.1.3.3.13-1. Number of Data Blocks Provided by Multiplex Options 3, 5, 7, 9, 11, 13, and 15

| Multiplex Option | Number of Fundamental Data Blocks | Maximum Number of Supplemental Data Blocks |
|-------------------------|--|---|
| 3 | 1 | 1 |
| 5 | 1 | 2 |
| 7 | 1 | 3 |
| 9 | 1 | 4 |
| 11 | 1 | 5 |
| 13 | 1 | 6 |
| 15 | 1 | 7 |

The number of data blocks provided shall not exceed the number allowed for the multiplex option.

Multiplex Options 3, 5, 7, 9, 11, 13, and 15 provide for the transmission of primary traffic, secondary traffic, and signaling traffic. The mobile station shall transmit signaling traffic, when available, only in the fundamental data block via the blank-and-burst format with the signaling traffic using all of the fundamental data block or via the dim-and-burst format with primary traffic and signaling traffic sharing the fundamental data block.

Primary traffic and secondary traffic may be transmitted in the fundamental data block or in supplemental data blocks. When primary traffic is available, secondary traffic may be transmitted in the fundamental data block via the dim-and-burst format with the primary traffic and secondary traffic sharing the fundamental data block. When primary traffic is not available, secondary traffic may be transmitted in the fundamental data block via the blank-and-burst format with the secondary traffic using all of the fundamental data block. When primary traffic is transmitted in a supplemental data block, the mobile station shall use the information bit structures specified in 6.1.3.3.13.1 for 9600 bps with primary traffic only. When secondary traffic is transmitted in a supplemental data block, the blank-and-burst format shall be used with the secondary traffic using all of the supplemental data block. Primary and secondary traffic shall not share a supplemental data block. When at least one supplemental data block is transmitted, the mobile station shall use the information bit structures specified in Figure 6.1.3.3.13.1-1 with 9600 bps for the fundamental data block.

The information bit structures for primary and signaling traffic for Multiplex Options 3, 5, 7, 9, 11, 13, and 15 are specified in 6.1.3.3.13.1. The information bit structures for secondary traffic are specified in 6.1.3.3.13.2. Table 6.1.3.3.13-2 shows the information bit structures supported by Multiplex Options 3, 5, 7, 9, 11, 13, and 15.

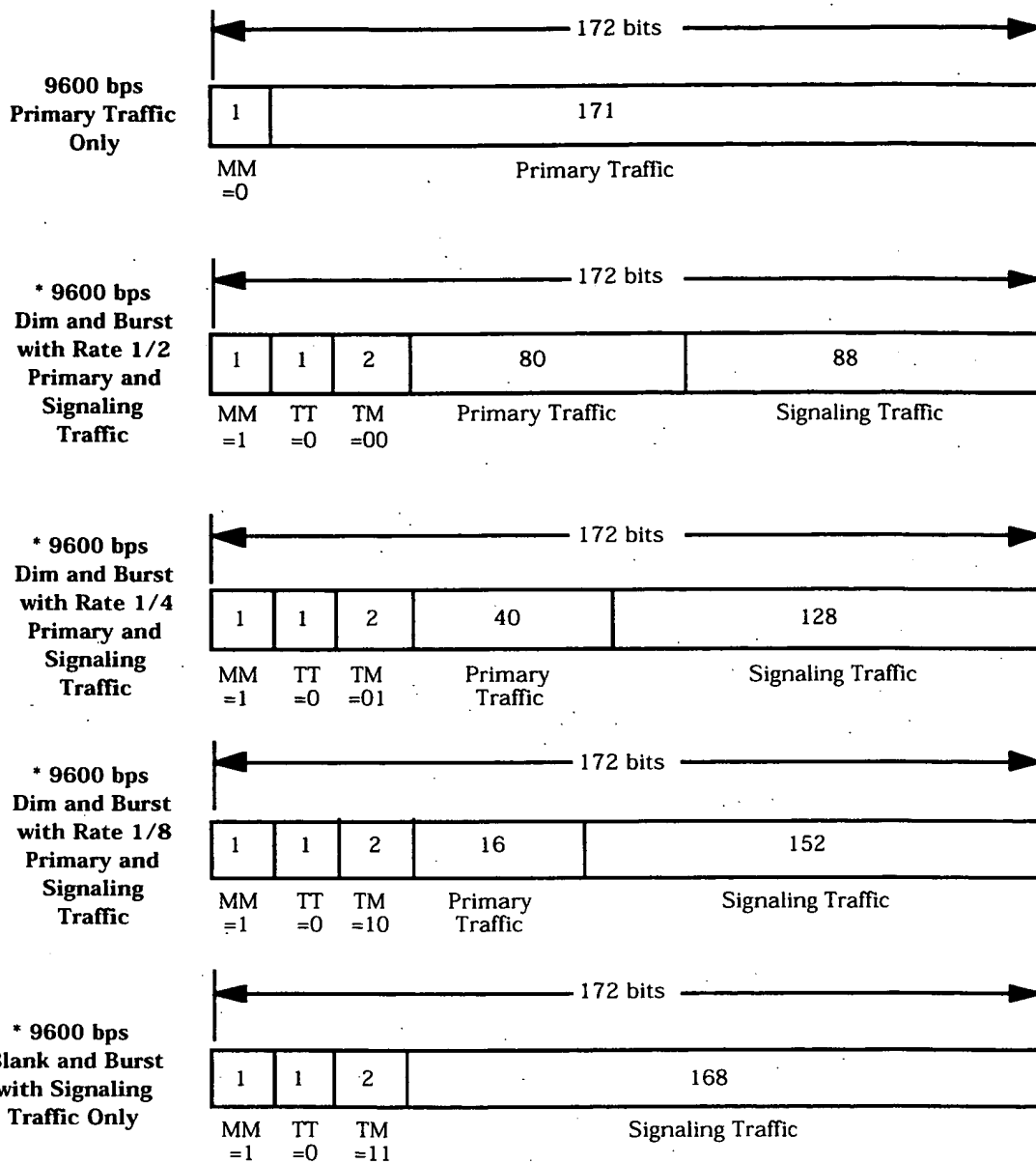
The mobile station may support Multiplex Options 3, 5, 7, 9, 11, 13, and 15. If the mobile station supports Multiplex Option 3, 5, 7, 9, 11, 13, or 15, the mobile station shall support the transmission of primary traffic and signaling traffic using the information bit structures

specified in 6.1.3.3.13.1. The mobile station may support secondary traffic; and if so, the mobile station shall also use the information bit structures specified in 6.1.3.3.13.2.

Table 6.1.3.3.13-2. Reverse Traffic Channel Information Bits for Multiplex Options 3, 5, 7, 9, 11, 13, and 15

| Transmit Rate (bits/sec) | Format Bits | | | Primary Traffic (bits/block) | Signaling Traffic (bits/block) | Secondary Traffic (bits/block) | Permitted in Supplemental Data Blocks |
|---|-----------------|-------------------|-------------------|---------------------------------|-----------------------------------|-----------------------------------|---------------------------------------|
| | Mixed Mode (MM) | Traffic Type (TT) | Traffic Mode (TM) | | | | |
| 9600 | '0' | - | - | 171 | 0 | 0 | Y |
| | '1' | '0' | '00' | 80 | 88 | 0 | N |
| | '1' | '0' | '01' | 40 | 128 | 0 | N |
| | '1' | '0' | '10' | 16 | 152 | 0 | N |
| | '1' | '0' | '11' | 0 | 168 | 0 | N |
| | * '1' | '1' | '00' | 80 | 0 | 88 | N |
| | * '1' | '1' | '01' | 40 | 0 | 128 | N |
| | * '1' | '1' | '10' | 16 | 0 | 152 | N |
| | * '1' | '1' | '11' | 0 | 0 | 168 | Y |
| 4800 | - | - | - | 80 | 0 | 0 | N |
| 2400 | - | - | - | 40 | 0 | 0 | N |
| 1200 | - | - | - | 16 | 0 | 0 | N |
| Note: Mobile station support of the secondary traffic structures, marked with *, is optional. | | | | | | | |

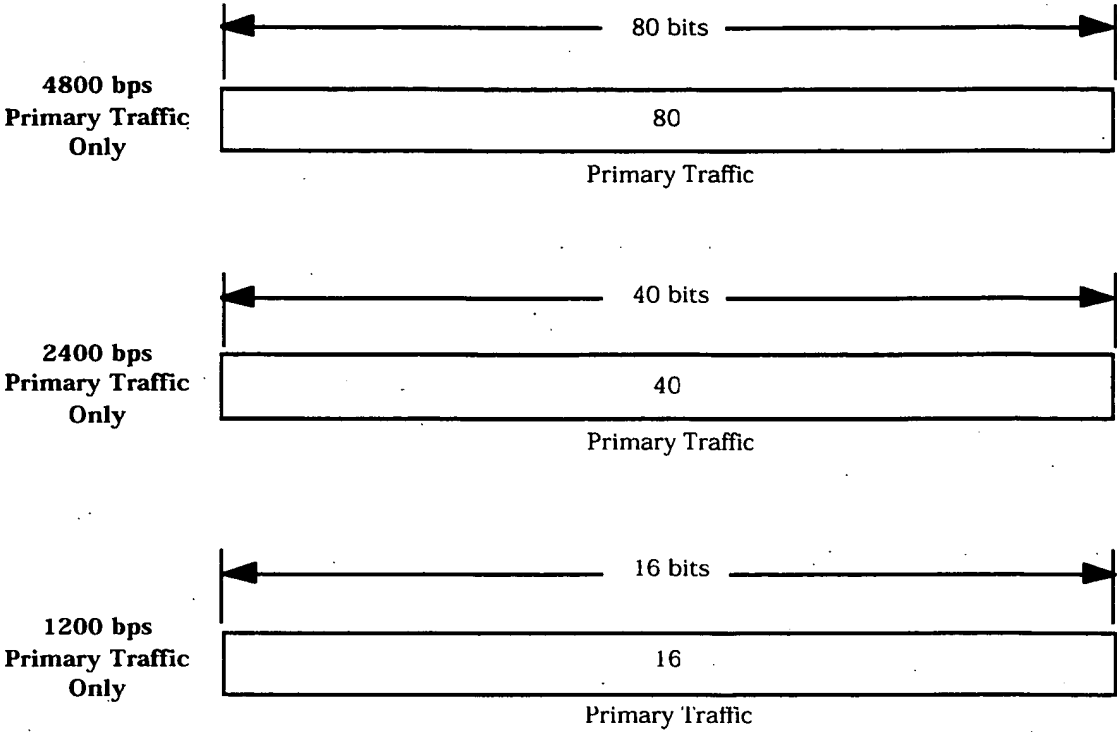
6.1.3.3.13.1 Primary and Signaling Traffic with Multiplex Options 3, 5, 7, 9, 11, 13, and 15
If the mobile station supports Multiplex Option 3, 5, 7, 9, 11, 13, or 15, the mobile station shall support the information bit structures described in Table 6.1.3.3.13-2 and Figure 6.1.3.3.13.1-1.

**Notation**

MM - Mixed Mode Bit
 TT - Traffic Type Bit
 TM - Traffic Mode Bits

*Applicable to the fundamental data block only; not permitted in the supplemental data blocks.

Figure 6.1.3.3.13.1-1. Information Bits for Primary Traffic and Signaling Traffic for Multiplex Options 3, 5, 7, 9, 11, 13, and 15 (Part 1 of 2)

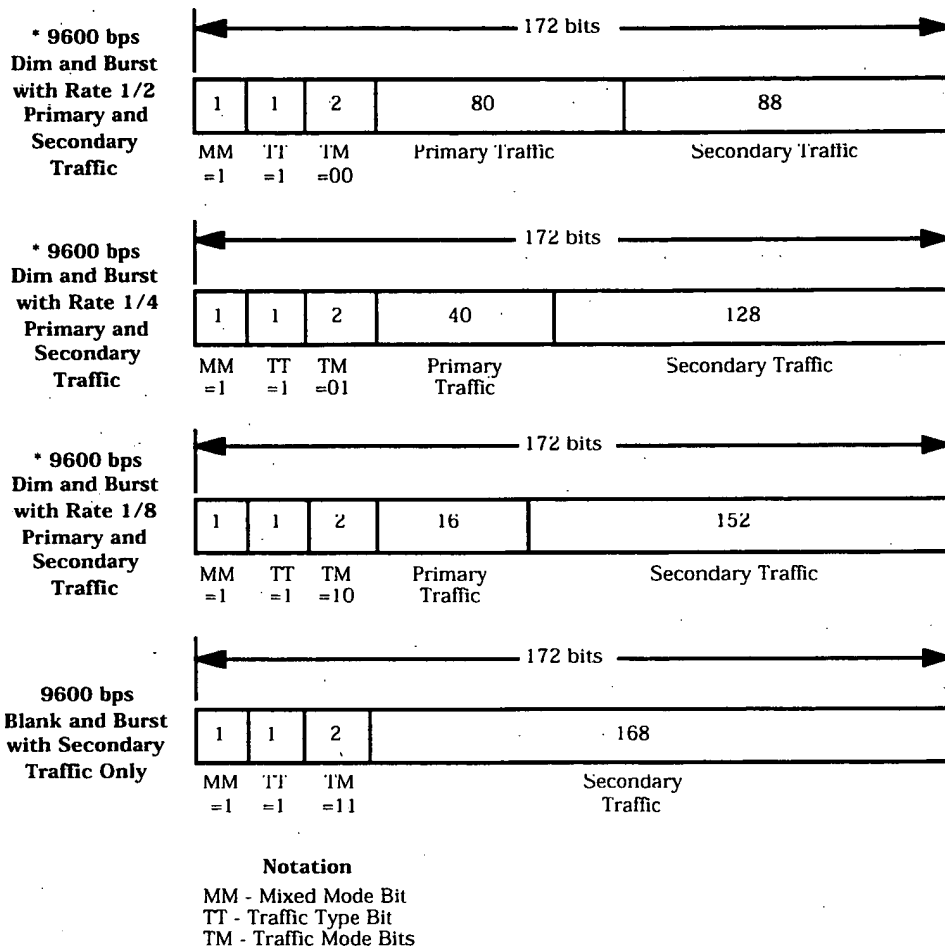


Note: All formats are applicable to the fundamental data block; supplemental data blocks support only the "9600 bps Primary Traffic Only" format.

Figure 6.1.3.3.13.1-1. Information Bits for Primary Traffic and Signaling Traffic for Multiplex Options 3, 5, 7, 9, 11, 13, and 15 (Part 2 of 2)

6.1.3.3.13.2 Secondary Traffic with Multiplex Options 3, 5, 7, 9, 11, 13, and 15

If the mobile station supports Multiplex Option 3, 5, 7, 9, 11, 13, or 15, and the mobile station supports secondary traffic, the mobile station shall use the information bit structures described in Table 6.1.3.3.13-2 and Figure 6.1.3.3.13.2-1.



*Applicable to the fundamental data blocks only; not permitted in supplemental data blocks.

Figure 6.1.3.3.13.2-1. Information Bits for Secondary Traffic for Multiplex Options 3, 5, 7, 9, 11, 13, and 15

6.1.3.3.13.3 Use of Various Information Bit Formats for Multiplex Options 3, 5, 7, 9, 11, 13, and 15

When neither primary traffic nor secondary traffic is available, the mobile station shall not transmit the supplemental data blocks. If signaling traffic is available, it shall be transmitted in the fundamental data block using only the blank-and-burst format. When not transmitting signaling traffic, the mobile station shall transmit null Traffic Channel data in the fundamental data block (see 6.1.3.3.13.5).

When primary traffic is available and secondary traffic is not available, the mobile station may transmit the fundamental data block, the supplemental data blocks, or both. For the fundamental data block, the mobile station shall use the information formats specified in 6.1.3.3.13.1. If signaling traffic is also available, the mobile station should use the dim-and-burst information formats specified in 6.1.3.3.13.1 for signaling traffic in the fundamental data block. When transmitting primary traffic in the supplemental data blocks, the mobile station shall use the information bit structures specified in 6.1.3.3.13.1 for 9600 bps with primary traffic only.

When primary traffic is not available and secondary traffic is available, the mobile station may transmit the fundamental data block, the supplemental data blocks, or both. For the fundamental data block, the mobile station shall use the information formats specified in 6.1.3.3.13.2 to transmit secondary traffic. If signaling traffic is also available, the mobile station shall use the blank-and-burst format specified in 6.1.3.3.13.1 for signaling traffic in the fundamental data block. When transmitting secondary traffic in the supplemental data blocks, the mobile station shall use the information bit structures specified in 6.1.3.3.13.2 with secondary traffic only.

When both primary traffic and secondary traffic are available, the mobile station may transmit the primary traffic in the fundamental data block, the supplemental data blocks, or both. The mobile station may transmit the secondary traffic in the fundamental data block sharing the block with the primary traffic, in the supplemental data blocks, or both. The mobile station shall use the information formats specified in 6.1.3.3.13.1 and 6.1.3.3.13.2 for the fundamental data block and supplemental data blocks. The mobile station shall not transmit null Traffic Channel data on the Reverse Traffic Channel. When signaling traffic is also available, the mobile station should use the dim-and-burst information formats specified in 6.1.3.3.13.1 for signaling traffic in the fundamental data block.

6.1.3.3.13.4 Control of Service Options for Multiplex Options 3, 5, 7, 9, 11, 13, and 15

Multiplex Options 3, 5, 7, 9, 11, 13, and 15 control the number of bits that the service options supply to the Reverse Traffic Channel for a 20 ms frame and the number of supplemental data blocks allowed in each 20 ms time interval.

The mobile station shall use the following rules on the fundamental data block when primary traffic is available: If signaling traffic is to be transmitted in a frame, the multiplex option shall either restrict primary traffic to zero bits (for a blank-and-burst block) or to fewer than 171 bits (for a dim-and-burst block) in the fundamental data block. If secondary traffic is to be transmitted in a frame, the multiplex option may restrict primary

traffic to fewer than 171 bits, but shall allow primary traffic at least 16 bits in the fundamental data block. In all other cases, the multiplex option shall allow primary traffic either 16, 40, 80, or 171 bits for the fundamental data block.

The mobile station may transmit 171 bits of primary traffic or 168 bits of secondary traffic in a supplemental data block.

6.1.3.3.13.5 Null Traffic Channel Data

Null Traffic Channel data shall consist of frames with only fundamental data block which contains primary traffic only, sent at the lowest negotiated transmission rate, with all primary traffic bits set equal to '1'.

The mobile station transmits null Traffic Channel data on the Reverse Traffic Channel when there is no primary, no secondary, and no signaling traffic available. Null Traffic Channel data serves as a "keep-alive" operation so that the base station can maintain connectivity with the mobile station.

6.1.3.3.14 Multiplex Options 4, 6, 8, 10, 12, 14, and 16 Information

Multiplex Options 4, 6, 8, 10, 12, 14, and 16 apply to Rate Set 2. Multiplex Options 2n, n = 2 to 8, provide one fundamental data block and up to n - 1 supplemental data blocks to the Reverse Traffic Channel per 20 ms, as shown in Table 6.1.3.3.14-1.

Table 6.1.3.3.14-1. Number of Data Blocks Provided by Multiplex Options 4, 6, 8, 10, 12, 14, and 16

| Multiplex Option | Number of Fundamental Data Blocks | Maximum Number of Supplemental Data Blocks |
|------------------|-----------------------------------|--|
| 4 | 1 | 1 |
| 6 | 1 | 2 |
| 8 | 1 | 3 |
| 10 | 1 | 4 |
| 12 | 1 | 5 |
| 14 | 1 | 6 |
| 16 | 1 | 7 |

The number of data blocks provided shall not exceed the number allowed for the multiplex option.

Multiplex Options 4, 6, 8, 10, 12, 14, and 16 provide for the transmission of primary traffic, secondary traffic, and signaling traffic.

The mobile station shall transmit signaling traffic, when available, only in the fundamental data block via the blank-and-burst format with the signaling traffic using all of the fundamental data block, via the dim-and-burst format with the primary traffic and

1 signaling traffic sharing the fundamental data block, or via the dim-and-burst format with
2 the primary traffic, secondary traffic, and signaling traffic sharing the same fundamental
3 data block.

4 Primary traffic and secondary traffic may be transmitted in the fundamental data block or
5 in supplemental data blocks. When primary traffic is available, secondary traffic may be
6 transmitted in the fundamental data block via the dim-and-burst format with the primary
7 traffic and secondary traffic sharing the fundamental data block. When primary traffic is
8 not available, secondary traffic may be transmitted in the fundamental data block via the
9 blank-and-burst format with the secondary traffic using all of the fundamental data block.
10 When primary traffic is transmitted in a supplemental data block, the mobile station shall
11 use the information bit structures specified in 6.1.3.3.14.1 for 14400 bps with primary
12 traffic only. When secondary traffic is transmitted in a supplemental data block, the blank-
13 and-burst format shall be used with the secondary traffic using all of the supplemental
14 data block. Primary and secondary traffic shall not share a supplemental data block.
15 When at least one supplemental data block is transmitted, the mobile station shall use the
16 information bit structures specified in Figure 6.1.3.3.14.1-1 with 14400 bps for the
17 fundamental data block.

18 The information bit structures for primary and signaling traffic for Multiplex Options 4, 6,
19 8, 10, 12, 14, and 16 are specified in 6.1.3.3.14.1. The information bit structures for
20 secondary traffic are specified in 6.1.3.3.14.2. Table 6.1.3.3.14-2 shows the information bit
21 structures supported by Multiplex Options 4, 6, 8, 10, 12, 14, and 16.

22 The mobile station may support Multiplex Options 4, 6, 8, 10, 12, 14, and 16. If the mobile
23 station supports Multiplex Option 4, 6, 8, 10, 12, 14, or 16, the mobile station shall
24 support the transmission of primary traffic and signaling traffic using the information bit
25 structures specified in 6.1.3.3.14.1. The mobile station may support secondary traffic; and
26 if so, the mobile station shall also use the information bit structures specified in
27 6.1.3.3.14.2.

Table 6.1.3.3.14-2. Reverse Traffic Channel Information Bits for Multiplex Options 4, 6, 8, 10, 12, 14, and 16

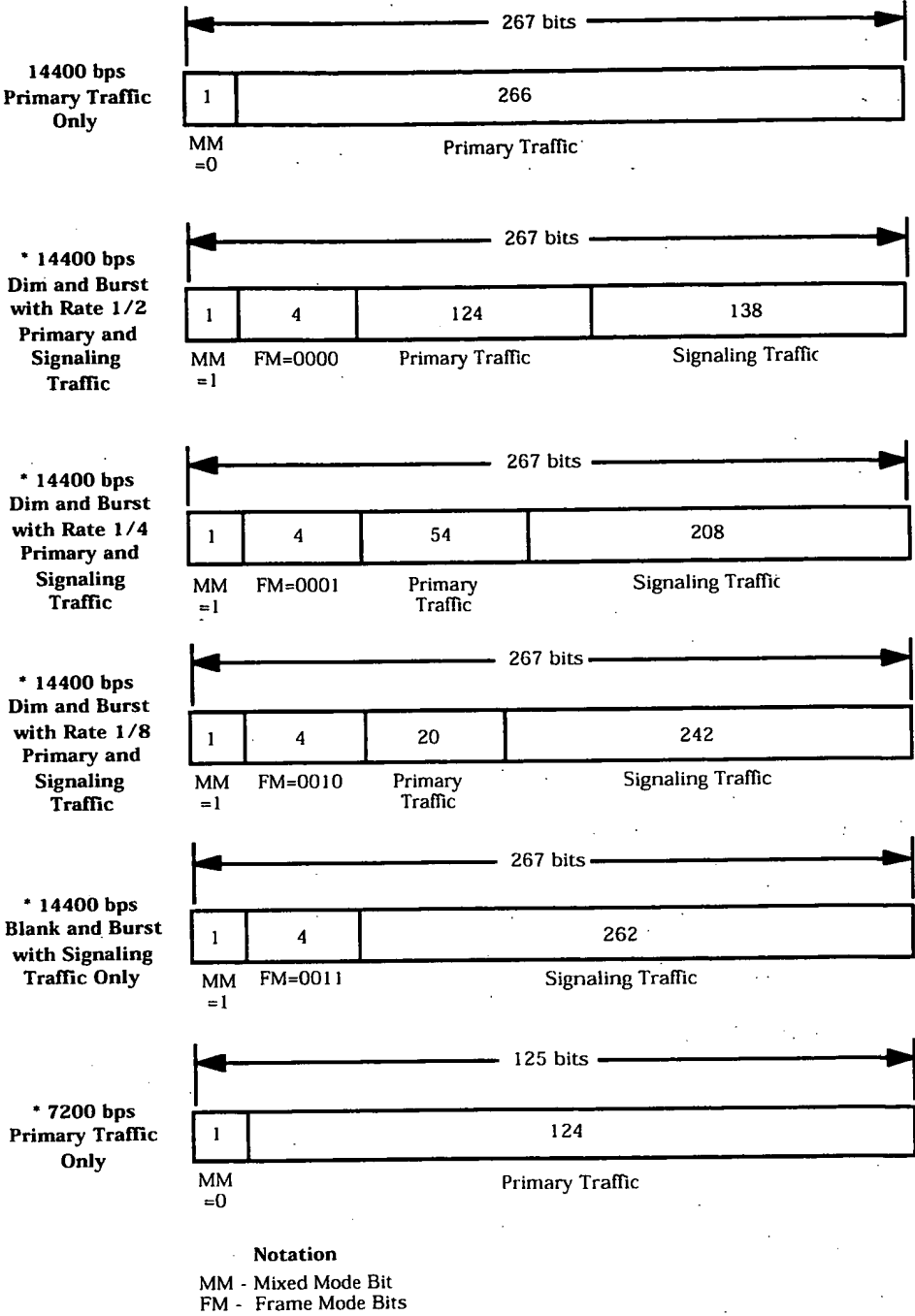
| Transmit Rate (bits/sec) | Format Bits | | Primary Traffic (bits/block) | Signaling Traffic (bits/ block) | Secondary Traffic (bits/ block) | Permitted on Supplemental Data Blocks |
|-----------------------------|--------------------|--------------------|---------------------------------|------------------------------------|------------------------------------|---------------------------------------|
| | Mixed Mode (MM) | Frame Mode (FM) | | | | |
| 14400 | '0' | - | 266 | 0 | 0 | Y |
| | '1' | '0000' | 124 | 138 | 0 | N |
| | '1' | '0001' | 54 | 208 | 0 | N |
| | '1' | '0010' | 20 | 242 | 0 | N |
| | '1' | '0011' | 0 | 262 | 0 | N |
| | * '1' | '0100' | 124 | 0 | 138 | N |
| | * '1' | '0101' | 54 | 0 | 208 | N |
| | * '1' | '0110' | 20 | 0 | 242 | N |
| | * '1' | '0111' | 0 | 0 | 262 | Y |
| | * '1' | '1000' | 20 | 222 | 20 | N |
| 7200 | '0' | - | 124 | 0 | 0 | N |
| | '1' | '000' | 54 | 67 | 0 | N |
| | '1' | '001' | 20 | 101 | 0 | N |
| | '1' | '010' | 0 | 121 | 0 | N |
| | * '1' | '011' | 54 | 0 | 67 | N |
| | * '1' | '100' | 20 | 0 | 101 | N |
| | * '1' | '101' | 0 | 0 | 121 | N |
| | * '1' | '110' | 20 | 81 | 20 | N |
| 3600 | '0' | - | 54 | 0 | 0 | N |
| | '1' | '00' | 20 | 32 | 0 | N |
| | '1' | '01' | 0 | 52 | 0 | N |
| | * '1' | '10' | 20 | 0 | 32 | N |
| | * '1' | '11' | 0 | 0 | 52 | N |
| 1800 | '0' | - | 20 | 0 | 0 | N |
| | * '1' | - | 0 | 0 | 20 | N |

Note: Mobile station support of the secondary traffic structures, marked with *, is optional.

1 6.1.3.3.14.1 Primary and Signaling Traffic with Multiplex Options 4, 6, 8, 10,
2 12, 14, and 16

3 If the mobile station supports Multiplex Option 4, 6, 8, 10, 12, 14, or 16, the mobile station
4 shall use the information bit structures described in Table 6.1.3.3.14-2 and Figure
5 6.1.3.3.14.1-1.

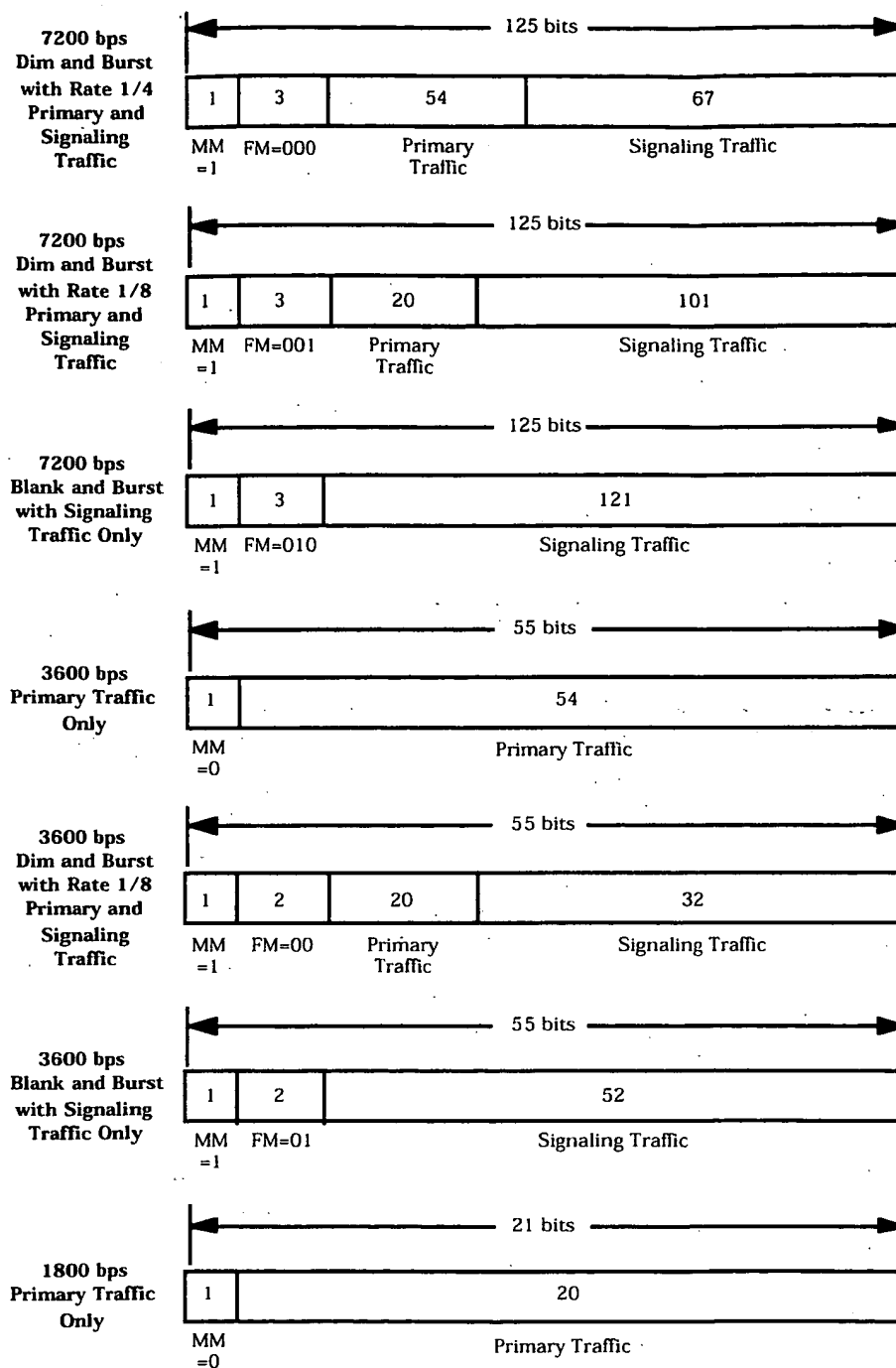
6



2
3
4
5

*Applicable to the fundamental data block only; not permitted in the supplemental data blocks.

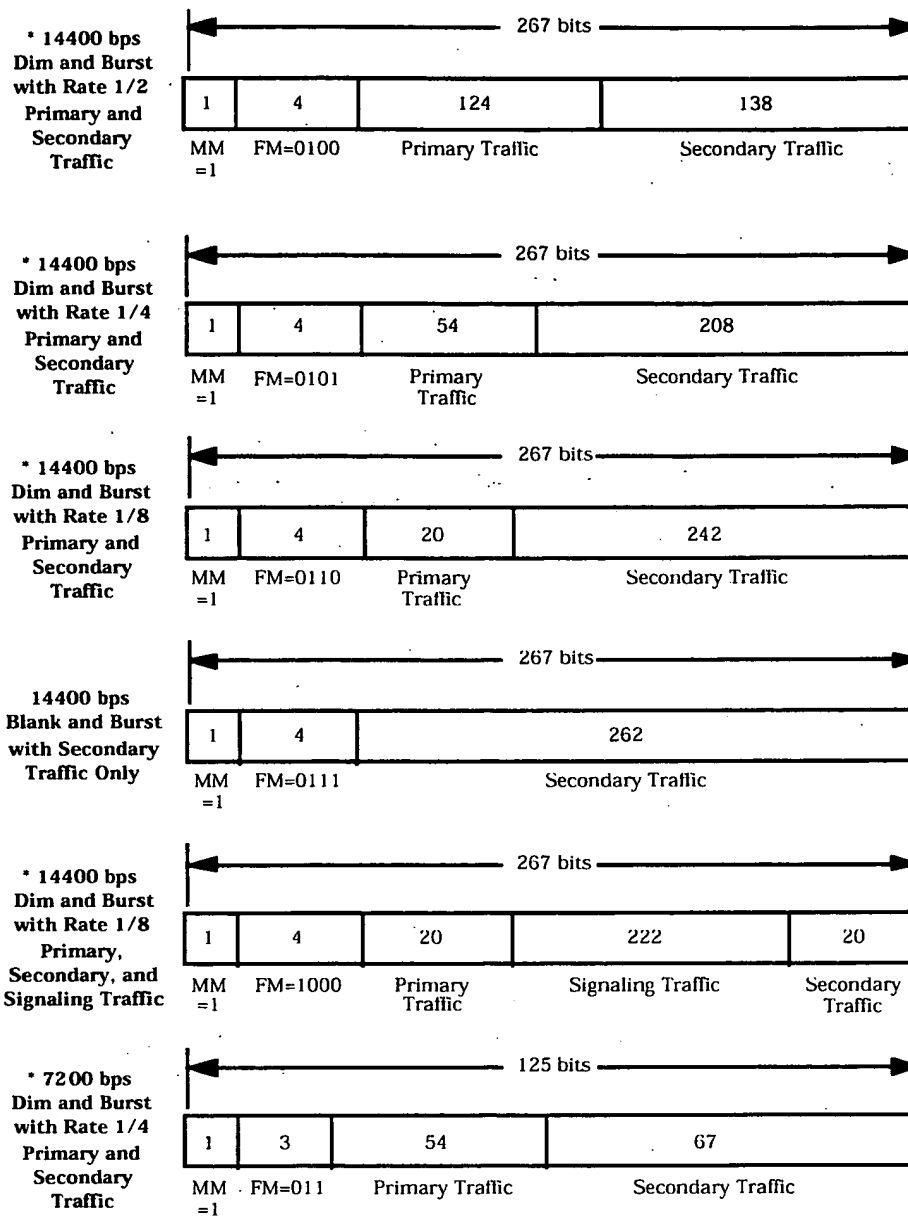
Figure 6.1.3.3.14.1-1. Information Bits for Primary Traffic and Signaling Traffic for Multiplex Options 4, 6, 8, 10, 12, 14, and 16 (Part 1 of 2)



1 Note: All formats are applicable to the fundamental data block; supplemental data blocks support
 2 only the "14400 bps Primary Traffic Only" format.

3 **Figure 6.1.3.3.14.1-1. Information Bits for Primary Traffic and Signaling Traffic for**
 4 **Multiplex Options 4, 6, 8, 10, 12, 14, and 16 (Part 2 of 2)**

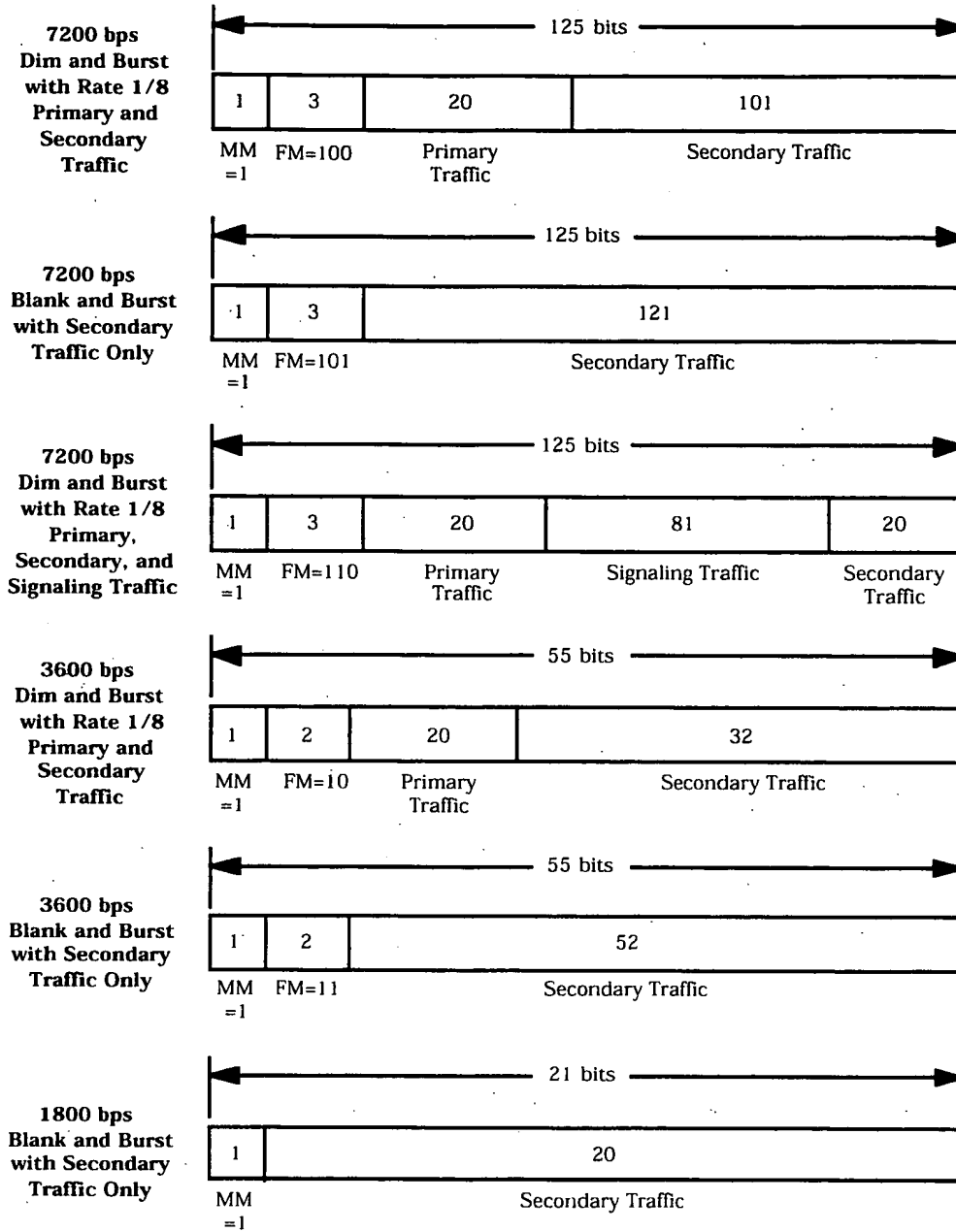
- 1 6.1.3.3.14.2 Secondary Traffic with Multiplex Options 4, 6, 8, 10, 12, 14, and 16
- 2 If the mobile station supports Multiplex Option 2, 4, 6, 8, 10, 12, 14, or 16, and the mobile
- 3 station supports secondary traffic, the mobile station shall use the information bit
- 4 structures described in Table 6.1.3.3.14-2 and in Figure 6.1.3.3.14.2-1.

**Notation**

MM - Mixed Mode Bit
 FM - Frame Mode Bits

*Applicable to the fundamental data block only; not permitted in the supplemental data blocks.

Figure 6.1.3.3.14.2-1. Information Bits for Secondary Traffic for Multiplex Options 4, 6, 8, 10, 12, 14, and 16 (Part 1 of 2)



1 Note: All formats are applicable to the fundamental data block; supplemental data blocks support
 2 only the "14400 bps Primary Traffic Only" and the "14400 bps blank-and-burst with secondary traffic
 3 only" formats.

4 **Figure 6.1.3.3.14.2-1. Information Bits for Secondary Traffic for Multiplex Options 4,**
 5 **6, 8, 10, 12, 14, and 16 (Part 2 of 2)**

6.1.3.3.14.3 Use of Various Information Bit Formats for Multiplex Options 4, 6, 8, 10, 12, 14, and 16

When neither primary traffic nor secondary traffic is available, the mobile station shall not transmit on the Reverse Supplemental Code Channels. If signaling traffic is available, it shall be transmitted on the Reverse Fundamental Code Channel using only blank-and-burst frames. When not transmitting signaling traffic, the mobile station shall transmit null Traffic Channel data on the Reverse Fundamental Code Channel (see 6.1.3.3.14.5).

When only primary traffic is available, the mobile station shall transmit the primary traffic in the fundamental data block or in the fundamental data block and in the supplemental data blocks. For the fundamental data block, the mobile station shall use the information formats specified in 6.1.3.3.14.1. If signaling traffic is also available, the mobile station should use the dim-and-burst information formats specified in 6.1.3.3.14.1 for signaling traffic in the fundamental data block. When transmitting primary traffic in the supplemental data blocks, the mobile station shall use the "14400 bps primary traffic only" format specified in 6.1.3.3.14.1.

When only secondary traffic is available, the mobile station shall transmit the secondary traffic in the fundamental data block or in the fundamental data block and in the supplemental data blocks. For the Reverse Fundamental Code Channel, the mobile station shall use the information formats specified in 6.1.3.3.14.1.2 to transmit secondary traffic. If signaling traffic is also available, the mobile station shall use the blank-and-burst format specified in 6.1.3.3.14.1 for signaling traffic in the fundamental data block. When transmitting secondary traffic in the supplemental data blocks, the mobile station shall use the "14400 bps blank-and-burst with secondary traffic format specified in 6.1.3.3.14.2. When both primary traffic and secondary traffic are available and signaling traffic is not available, the mobile station shall transmit in the fundamental data block or in the fundamental data block and in the supplemental data blocks. The mobile station may transmit the secondary traffic in the fundamental data block sharing the block with the primary traffic, in the supplemental data blocks, or both. The mobile station shall use the information formats specified in 6.1.3.3.14.1 and 6.1.3.3.14.2 for the fundamental data block and supplemental data blocks. The mobile station shall not transmit null Traffic Channel data on the Reverse Traffic Channel. When signaling traffic is also available, the mobile station should use the dim-and-burst information formats specified in 6.1.3.3.14.1 for signaling traffic in the fundamental data block.

6.1.3.3.14.4 Control of Service Options for Multiplex Options 4, 6, 8, 10, 12, 14, and 16

Multiplex Options 4, 6, 8, 10, 12, 14, and 16 control the number of bits that the service options supply to the Reverse Traffic Channel for a 20 ms frame and the number of supplemental data blocks allowed in each 20 ms time interval.

The mobile station shall use the following rules on the fundamental data block when primary traffic is available: If signaling traffic is to be transmitted in a frame, the multiplex option shall either restrict primary traffic to zero bits (for a blank-and-burst block) or to fewer than 266 bits (for a dim-and-burst block) in the fundamental data block. If secondary traffic is to be transmitted in a frame, the multiplex option may restrict primary

traffic to fewer than 266 bits, but shall allow primary traffic at least 20 bits in the fundamental data block. In all other cases, the multiplex option shall allow primary traffic either 20, 54, 124, or 266 bits for the fundamental data block.

The mobile station may transmit 266 bits of primary traffic or 262 bits of secondary traffic in a supplemental data block.

6.1.3.3.14.5 Null Traffic Channel Data

Null Traffic Channel data shall consist of frames with only fundamental data block which contains primary traffic only, sent at the lowest negotiated transmission rate, with all primary traffic bits set equal to '1'.

The mobile station transmits null Traffic Channel data on the Reverse Traffic Channel when there is no primary, no secondary, and no signaling traffic available. Null Traffic Channel data serves as a "keep-alive" operation, so that the base station can maintain connectivity with the mobile station.

6.1.4 Limitations on Emissions

6.1.4.1 Conducted Spurious Emissions

The mobile station shall meet the spurious emissions requirements at all transmit power levels. The mobile station shall meet the spurious emission requirements with an inoperative antenna assembly.

6.1.4.1.1 Cellular Band

When transmitting in the cellular band, the spurious emissions between 819 and 854 MHz shall be less than the limits specified in Table 6.1.4.1.1-1.⁸

Table 6.1.4.1.1-1. Band Class 0 Transmitter Spurious Emission Limits

| For $ \Delta f $ Greater Than | Emission Limit |
|-------------------------------|---|
| 885 kHz | less stringent of -42 dBc / 30 kHz or -54 dBm / 1.23 MHz |
| 1.98 MHz | less stringent of -54 dBc / 30 kHz or -54 dBm / 1.23 MHz |
| 3.125 MHz | -13 dBm / 100 kHz |

Note: All frequencies in the measurement bandwidth shall satisfy the restrictions on $|\Delta f|$ where Δf = center frequency - closer measurement edge frequency. The -13 dBm / 100 kHz emission limit is based on ITU Category A emission limits.

⁸ The spurious emission limits are required to be met up to 5 MHz outside of the allocation.

In addition, spurious emissions in each 1.23 MHz band located anywhere in the mobile station receive band between 869 and 894 MHz shall be less than -80 dBm. These requirements shall apply to measurements made at the mobile station antenna connector.

Current FCC rules shall also apply.

6.1.4.1.2 PCS Band

When transmitting in the PCS band, the spurious emissions between 1845 and 1915 MHz shall be less than the limits specified in Table 6.1.4.1.2-1.⁹

Table 6.1.4.1.2-1. Band Class 1 Transmitter Spurious Emission Limits

| For $ \Delta f $ Greater Than | Emission Limit |
|-------------------------------|---|
| 1.25 MHz | less stringent of -42 dBc / 30 kHz or -54 dBm / 1.23 MHz |
| 1.98 MHz | less stringent of -50 dBc / 30 kHz or -54 dBm / 1.23 MHz |
| 2.25 MHz | -13 dBm / 1 MHz |

Note: All frequencies in the measurement bandwidth shall satisfy the restrictions on $|\Delta f|$ where Δf = center frequency - closer measurement edge frequency. The -13 dBm / 1 MHz emission limit is based on FCC rules which are more stringent than ITU Category A emission limits.

In addition, spurious emissions in each 1.23 MHz band located anywhere in the mobile station receive band between 1930 and 1990 MHz shall be less than -80 dBm. These requirements shall apply to measurements made at the mobile station antenna connector.

6.1.4.2 Radiated Spurious Emissions

Radiated spurious emissions (from sources other than the antenna connector) shall meet levels corresponding to the conducted spurious requirements listed in 6.1.4.1.

6.1.5 Synchronization and Timing

6.1.5.1 Time Reference

Figure 1.2-1 illustrates the nominal relationship between the mobile station and base station transmit and receive time references. The mobile station shall establish a time reference which is utilized to derive timing for the transmit chip, symbol, frame slot, and system timing. Under steady state conditions, the mobile station time reference shall be within $\pm 1 \mu\text{s}$ of the time of occurrence of the earliest multipath component being used for demodulation as measured at the mobile station antenna connector. If another multipath

⁹ The spurious emission limits are required to be met up to 5 MHz outside of the allocation

1 component (belonging to the same Pilot Channel or to a different Pilot Channel) becomes
2 the earliest arriving multipath component to be used, the mobile station time reference
3 shall track to the new component. If the difference between the mobile station time
4 reference and the time of occurrence of the earliest arriving multipath component being
5 used for demodulation, as measured at the mobile station antenna connector, is less than
6 $\pm 1 \mu\text{s}$, the mobile station may track its time reference to the earliest arriving multipath
7 component being used for demodulation.

8 When receiving the Forward Traffic Channel, the mobile station time reference shall be
9 used as the transmit time of the Reverse Traffic Channel. If a mobile station time reference
10 correction is needed, it shall be no faster than $1/4$ chip (203.451 ns) in any 200 ms period
11 and no slower than $3/8$ PN chip (305.18 ns) per second.

12 When receiving the Paging Channel, the mobile station time reference shall be used as the
13 transmit time of the Access Channel. If a mobile station time reference correction is needed
14 before transmitting an access probe, the mobile station shall correct the time reference
15 before it transmits the access probe; there is no limitation on the speed of the correction. If
16 a mobile station time reference correction is needed while transmitting an access probe, it
17 shall be no faster than $1/4$ chip (203.451 ns) in any 200 ms period and no slower than
18 $3/8$ PN chip (305.18 ns) per second.

19 6.1.6 Transmitter Performance Requirements

20 System performance is predicated on transmitters meeting the requirements set forth in
21 TIA/EIA-98-B for mobile stations supporting Band Class 0 and ANSI J-STD-019 for mobile
22 stations supporting Band Class 1.

6.2 Receiver

6.2.1 Frequency Parameters

6.2.1.1 Channel Spacing and Designation

Channel spacing and designation for the mobile station reception shall be as specified in 6.1.1.1. Valid channels for CDMA operations shall be as specified in 6.1.1.1.

6.2.2 Demodulation Characteristics

6.2.2.1 Processing

The mobile station demodulation process shall perform complementary operations to the base station modulation process on the Forward CDMA Channel (see 7.1.3).

The mobile station shall support Forward Multiplex Option 1. The mobile station may support Forward Multiplex Option 2.

If a mobile station supports Forward Multiplex Option $2n-1$, where $n = 2, 3, 4, 5, 6, 7$, or 8 , then the mobile station shall also support Forward Multiplex Option(s) $2i-3$, for $i = 2, 3, \dots, n$.

If a mobile station supports Forward Multiplex Option $2n$, where $n = 2, 3, 4, 5, 6, 7$, or 8 , then the mobile station shall also support Forward Multiplex Option(s) $2i-2$, for $i = 2, 3, \dots, n$.

The mobile station shall support Rate Set 1 on the forward Traffic Channel. If a mobile station supports Forward Multiplex Option 2, the mobile station shall support Rate Set 2 on the Forward Traffic Channel.

When the mobile station receives a Rate Set 2 frame with the Reserved/Flag Bit in the Forward Fundamental Code Channel set to '1' in frame i , the mobile station need not process the Forward Supplemental Code Channels in frame $i + 2$ (see 7.1.3.5.2.5). Otherwise, the mobile station shall process the assigned Forward Supplemental Code Channels.

The mobile station shall provide a minimum of four processing elements that can be directed independently from each other. At least three elements shall be capable of tracking and demodulating multipath components of the Forward CDMA Channel. These elements shall be capable of tracking and demodulating the Forward Fundamental Code Channel and all of the Forward Supplemental Code Channels supported by the mobile station. At least one element shall be a "searcher" element capable of scanning and estimating the signal strength at each pilot PN sequence offset.

When the mobile station begins monitoring its assigned slot of the Paging Channel, the mobile station should initialize the convolutional code decoder to minimize the message

error rate of the first message which is received at the beginning of the mobile station's assigned Paging Channel slot.¹⁰

6.2.2.2 Forward Traffic Channel Frame Categorization

6.2.2.2.1 Forward Traffic Channel Frame Categorization for Multiplex Options 1, 3, 5, 7, 9, 11, 13, and 15

The mobile station shall classify received Forward Fundamental Code Channel frames (see 7.1.3.5.12 and 7.1.3.5.14) into the following 14 categories when Multiplex Option 1, 3, 5, 7, 9, 11, 13, or 15 is used:

1. 9600 bps frame, primary traffic only or null Traffic Channel data only
2. 9600 bps frame, dim-and-burst with Rate 1/2 primary and signaling traffic
3. 9600 bps frame, dim-and-burst with Rate 1/4 primary and signaling traffic
4. 9600 bps frame, dim-and-burst with Rate 1/8 primary and signaling traffic
5. 9600 bps frame, blank-and-burst with signaling traffic only
6. 4800 bps frame, primary traffic or null Traffic Channel data only
7. 2400 bps frame, primary traffic or null Traffic Channel data only
8. 1200 bps frame, primary traffic or null Traffic Channel data only
9. 9600 bps frame, primary traffic only, with bit errors¹¹
10. Frame with insufficient frame quality¹²
11. 9600 bps frame, dim-and-burst with Rate 1/2 primary and secondary traffic
12. 9600 bps frame, dim-and-burst with Rate 1/4 primary and secondary traffic
13. 9600 bps frame, dim-and-burst with Rate 1/8 primary and secondary traffic
14. 9600 bps frame, blank-and-burst with secondary traffic only

Frames in categories 9 and 10 are bad frames; all frames otherwise categorized are considered good frames.

Mobile stations that do not implement secondary traffic services are not required to implement categories 11 through 14.

¹⁰ This allows the mobile station to take advantage of the four padding bits sent prior to the beginning of the slot (see 7.7.2.1.2). This can be achieved by assigning the greatest likelihood to 16 possible states and the least likelihood to the remaining states.

¹¹ Certain service options, which can be connected to the multiplex sublayer, can satisfactorily handle some bit errors. This category is used when the frame quality indicator (CRC) fails but other parameters indicate a 9600 bps frame has been received.

¹² This category is used when the mobile station is unable to decide on the data rate of the received frame or when the mobile station detects a frame in error which does not belong to category 9.

1 The mobile station shall classify received Forward Supplemental Code Channel frames into
2 the following 3 categories when Multiplex Option 1, 3, 5, 7, 9, 11, 13, or 15 is used:

- 3 1. 9600 bps frame primary traffic only
- 4 2. 9600 bps frame secondary traffic only
- 5 3. Frame with insufficient frame quality

6 Frames received and classified as category 3 frames are considered bad frames; all frames
7 otherwise categorized are considered good frames.

8 Mobile stations that do not implement secondary traffic services are not required to
9 implement category 2.

10 6.2.2.2.2 Forward Traffic Channel Frame Categorization for Multiplex Options 2, 4, 6, 8,
11 10, 12, 14, and 16

12 The mobile station shall classify received Forward Fundamental Code Channel frames (see
13 7.1.3.5.13 and 7.1.3.5.15) into the following 26 categories when Multiplex Option 2, 4, 6, 8,
14 10, 12, 14, or 16 is used:

- 15 1. 14400 bps frame, primary traffic only or null Traffic Channel data only
- 16 2. 14400 bps frame, dim-and-burst with Rate 1/2 primary and signaling traffic
- 17 3. 14400 bps frame, dim-and-burst with Rate 1/4 primary and signaling traffic
- 18 4. 14400 bps frame, dim-and-burst with Rate 1/8 primary and signaling traffic
- 19 5. 14400 bps frame, blank-and-burst with signaling traffic only
- 20 6. 14400 bps frame, dim-and-burst with Rate 1/2 primary and secondary traffic
- 21 7. 14400 bps frame, dim-and-burst with Rate 1/4 primary and secondary traffic
- 22 8. 14400 bps frame, dim-and-burst with Rate 1/8 primary and secondary traffic
- 23 9. 14400 bps frame, blank-and-burst with secondary traffic only
- 24 10. 14400 bps frame, dim-and-burst with Rate 1/8 primary, secondary traffic, and
25 signaling traffic
- 26 11. 7200 bps frame, primary traffic only or null Traffic Channel data only
- 27 12. 7200 bps frame, dim-and-burst with Rate 1/4 primary and signaling traffic
- 28 13. 7200 bps frame, dim-and-burst with Rate 1/8 primary and signaling traffic
- 29 14. 7200 bps frame, blank-and-burst with signaling traffic only
- 30 15. 7200 bps frame, dim-and-burst with Rate 1/4 primary and secondary traffic
- 31 16. 7200 bps frame, dim-and-burst with Rate 1/8 primary and secondary traffic
- 32 17. 7200 bps frame, blank-and-burst with secondary traffic only
- 33 18. 7200 bps frame, dim-and-burst with Rate 1/8 primary, secondary traffic, and
34 signaling traffic

- 1 19. 3600 bps frame, primary traffic only or null Traffic Channel data only
- 2 20. 3600 bps frame, dim-and-burst with Rate 1/8 primary and signaling traffic
- 3 21. 3600 bps frame, blank-and-burst with signaling traffic only
- 4 22. 3600 bps frame, dim-and-burst with Rate 1/8 primary and secondary traffic
- 5 23. 3600 bps frame, blank-and-burst with secondary traffic only
- 6 24. 1800 bps frame, primary traffic only or null Traffic Channel data only
- 7 25. 1800 bps frame, blank-and-burst with secondary traffic only
- 8 26. Frame with insufficient frame quality¹³

9 Frames in category 26 are bad frames; all frames otherwise categorized are considered good
10 frames.

11 Mobile stations that do not implement secondary traffic services are not required to
12 implement categories 6 through 10, 15 through 18, 22, 23, and 25.

13 The mobile station shall classify received Forward Supplemental Code Channel frames into
14 the following 3 categories when Multiplex Option 2, 4, 6, 8, 10, 12, 14, or 16 is used:

- 15 1. 14400 bps frame primary traffic only
- 16 2. 14400 bps frame secondary traffic only
- 17 3. Frame with insufficient frame quality

18 Frames received and classified as category 3 frames are considered bad frames; all frames
19 otherwise categorized are considered good frames.

20 Mobile stations that do not implement secondary traffic services are not required to
21 implement category 2.

22 6.2.2.3 Erasure Indicator Bit

23 If Rate Set 2 is used on the Reverse Traffic Channel, then during continuous operation on
24 the Fundamental Code Channel of the Forward and Reverse Traffic Channels the mobile
25 station shall set the Reserved/Erasure Indicator Bit of the Reverse Fundamental Code
26 Channel (see Figure 6.1.3.3.2-2) as follows:

- 27 • The mobile station shall set the Reserved/Erasure Indicator Bit to '1' in the second
28 transmitted frame following the reception of a bad frame on the Fundamental Code
29 Channel of the Forward Traffic Channel as shown in Figure 6.2.2.3-1.
- 30 • The mobile station shall set the Reserved/Erasure Indicator Bit to '0' in the second
31 transmitted frame following the reception of a good frame on the Forward
32 Fundamental Code Channel of the Forward Traffic Channel as shown in Figure
33 6.2.2.3-1.

¹³ This category is used when the mobile station is unable to decide on the data rate of the received frame or when errors are detected.

When the mobile station temporarily suspends reception of the Fundamental Code Channel of the Forward Traffic Channel in order to tune to another frequency (such as during a PUF probe, a hard handoff with return on failure, or a Candidate Frequency search), the mobile station shall set the Reserved/Erasure Indicator Bit of the Reverse Fundamental Code Channel (see Figure 6.1.3.3.2-2) as follows:

- In the first two frames after the mobile station re-enables its transmitter, the mobile station shall send Reserved/Erasure Indicator Bits corresponding to the two most recently received frames. One or both of these Reserved/Erasure Indicator Bits could be for frames that were received before the mobile station tuned to the other frequency, and were stored by the mobile station before the visit.
- After transmitting the first two frames, if the number of frames missed on the Reverse Traffic Channel (due to the mobile station's visit away from the Serving Frequency) is less than that on the Forward Traffic Channel, the mobile station shall set the Reserved/Erasure Indicator Bit to '0', until it receives two frames on the Forward Traffic Channel.
- The mobile station shall then set subsequent Reserved/Erasure Indicator Bits as described above for continuous operation.

If Rate Set 2 is used on the Reverse Traffic Channel, the mobile station shall set the Reserved/Erasure Indicator Bit of the Reverse Supplemental Code Channel (see Figure 6.1.3.3.2-2) to '0'.

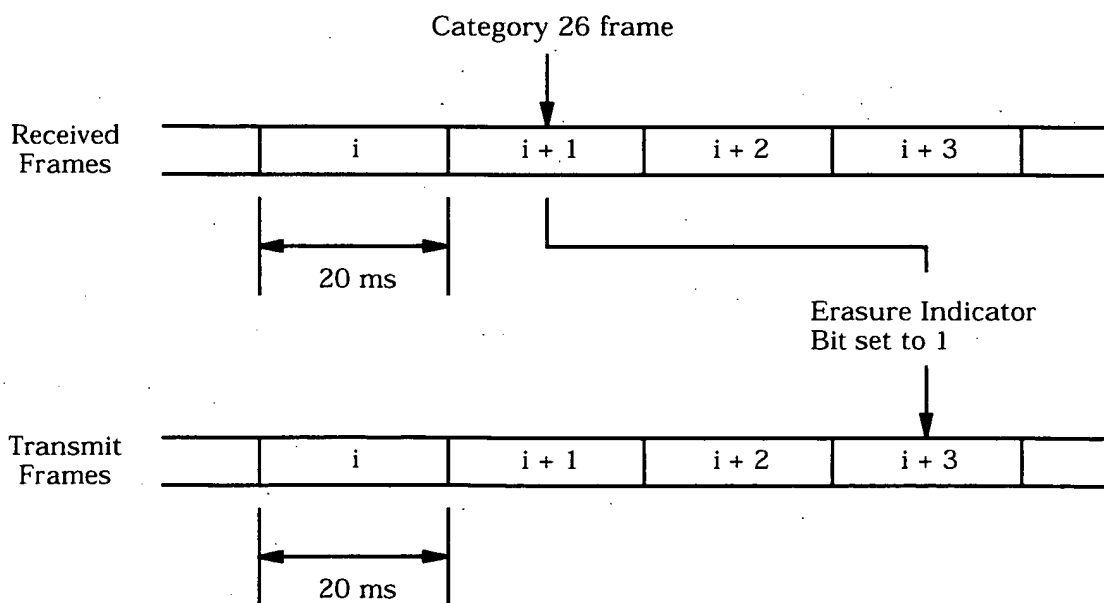


Figure 6.2.2.3-1. Erasure Indicator Bit Timing

6.2.2.4 Forward Traffic Channel Time Alignment

The Forward Traffic Channel frame time alignment is specified in 7.1.3.5.1. A mobile station shall support offset Forward Traffic Channel frames.

6.2.3 Limitations on Emissions

When operating in Band Class 0, the mobile station shall meet the requirements in Section 9.5.1 of TIA/EIA-98-B. When operating in Band Class 1, the mobile station shall meet the requirements in Section 4.5.1 of ANSI J-STD-018.

6.2.4 Receiver Performance Requirements

System performance is predicated on receivers meeting the requirements set forth in TIA/EIA-98-B for CDMA cellular systems and ANSI J-STD-018 for CDMA PCS systems.

6.3 Security and Identification

6.3.1 Mobile Station Identification Number

Mobile stations operating in the analog mode are identified by the mobile identification number (MIN) (see 2.3.1).

Mobile stations operating in the CDMA mode are identified by the International Mobile Station Identity (IMSI).¹⁴ Mobile Stations shall have two different identifiers, IMSI_T and IMSI_M. The IMSI consists of up to 15 numerical characters (0-9). The first three digits of the IMSI are the Mobile Country Code (MCC), and the remaining digits are the National Mobile Station Identity (NMSI). The NMSI consists of the Mobile Network Code (MNC) and the Mobile Station Identification Number (MSIN). The IMSI structure is shown in Figure 6.3.1-1.

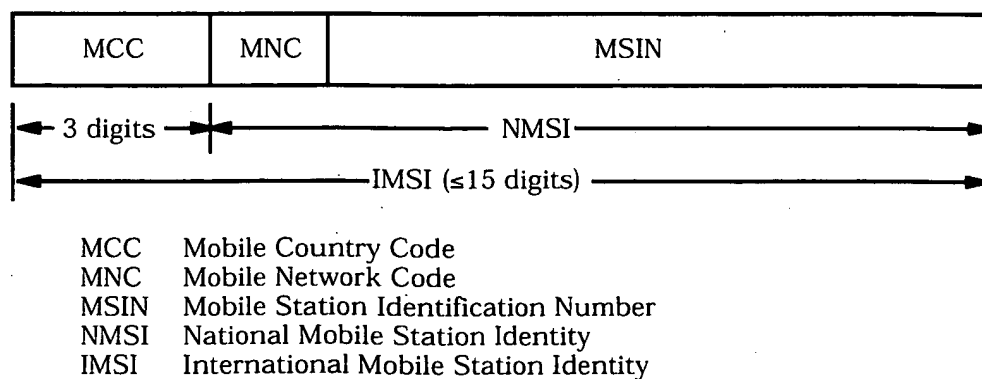


Figure 6.3.1-1. IMSI Structure

¹⁴ See *CCITT Blue Book*, Volume II-Fascicle II.2, Recommendation E.212, November 1988.

An IMSI that is 15 digits in length is called a class 0 IMSI (the NMSI is 12 digits in length); an IMSI that is less than 15 digits in length is called a class 1 IMSI (the NMSI is less than 12 digits in length).

IMSI_M is an IMSI that contains a MIN in the lower ten digits of the NMSI. An IMSI_M can be a class 0 or a class 1 IMSI. If the IMSI_M is not programmed, the mobile station shall set the four least-significant digits of the IMSI_M to the value of the ESN_p, converted directly from binary to decimal, modulo 10000. The other digits shall be set to 0.

IMSI_T is an IMSI that is not associated with the MIN assigned to the mobile station. An IMSI_T can be a class 0 or class 1 IMSI. If the IMSI_T is not programmed, the mobile station shall set the four least-significant digits of the IMSI_T to the value of the ESN_p, converted directly from binary to decimal, modulo 10000. The other digits shall be set to 0.

When operating in the CDMA mode the mobile station shall set its operational IMSI value, IMSI_O, to either the IMSI_M or the IMSI_T depending on the capabilities of the base station (See 6.6.2.2.5).

An IMSI_S is a 10-digit (34-bit) number derived from the IMSI. When an IMSI has ten or more digits, IMSI_S is equal to the last ten digits. When an IMSI has fewer than ten digits, the least significant digits of IMSI_S are equal to the IMSI and zeros are added to the most significant side to obtain a total of ten digits. A 10-digit IMSI_S consists of 3- and 7-digit parts, called IMSI_S2 and IMSI_S1, respectively, as illustrated in Figure 6.3.1-2. IMSI_S is mapped into a 34-bit number (see 6.3.1.1). The IMSI_S derived from IMSI_M is designated IMSI_M_S. The IMSI_S derived from IMSI_T is designated IMSI_T_S. The IMSI_S derived from IMSI_O is designated IMSI_O_S.

The mobile station shall have memory to store the 34-bit IMSI_M_S_p and the 34-bit IMSI_T_S_p. IMSI_M_S_p is represented by the 10-bit IMSI_M_S2_p and the 24 bit IMSI_M_S1_p. IMSI_T_S_p is represented by the 10-bit IMSI_T_S2_p and the 24 bit IMSI_T_S1_p.

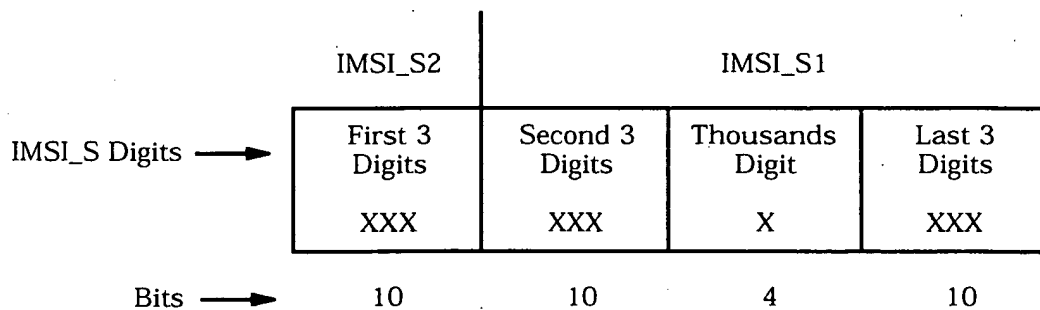


Figure 6.3.1-2. IMSI_S Binary Mapping

When an IMSI has 12 or more digits, IMSI_11_12 is equal to the 11th and 12th digits of the IMSI. When an IMSI has fewer than 12 digits, digits with a value equal to zero are added to

the most significant side to obtain a total of 12 digits and the IMSI_{11_12} is equal to the 11th and 12th digits of the resulting number.

IMSI_{11_12} is encoded as described in 6.3.1.2. The mobile station shall have memory to store the 7-bit IMSI_{M_11_12p} and the 7-bit IMSI_{T_11_12p}.

The 3-digit MCC is encoded as described in 6.3.1.3. The mobile station shall have memory to store the 10-bit MCC_{Mp} and the 10-bit MCC_{Tp}.

If the mobile station has a class 1 IMSI_T, or IMSI_M, it shall have memory to store IMSI_{T_ADDR_NUMp} and IMSI_{M_ADDR_NUMp}. IMSI_{T_ADDR_NUMp} is equal to the number of digits in the NMSI minus four. IMSI_{M_ADDR_NUMp} is equal to the number of digits in the NMSI of the IMSI_M minus four.

6.3.1.1 Encoding of IMSI_{M_S} and IMSI_{T_S}

The IMSI_{M_S} and IMSI_{T_S} binary mapping is defined as follows:

1. The first three digits of the IMSI_{M_S} and the first three digits of the IMSI_{T_S} are mapped into ten bits (corresponding to IMSI_{M_S2p} and IMSI_{T_S2p}, respectively) by the following coding algorithm:
 - a. Represent these three digits as $D_1 D_2 D_3$ with the digit equal to zero being given the value of ten.
 - b. Compute $100 \times D_1 + 10 \times D_2 + D_3 - 111$.
 - c. Convert the result in step b to binary by the standard decimal-to-binary conversion as described in Table 6.3.1.1-1.

Table 6.3.1.1-1. Decimal to Binary Conversion Table

| Decimal Number | Binary Number |
|----------------|---------------|
| 0 | 0000000000 |
| 1 | 0000000001 |
| 2 | 0000000010 |
| 3 | 0000000011 |
| 4 | 0000000100 |
| • | • |
| • | • |
| • | • |
| 998 | 1111100110 |
| 999 | 1111100111 |

2. The second three digits of IMSI_M_S and the second three digits of IMSI_T_S are mapped into the ten most significant bits of IMSI_M_S1_p and IMSI_T_S1_p, respectively, by the coding algorithm described in 1.
3. The last four digits of IMSI_M_S and the last four digits of IMSI_T_S are mapped into the 14 least significant bits of IMSI_M_S1_p and IMSI_T_S1_p, respectively, as follows:
 - a. The thousands digit is mapped into four bits by a Binary-Coded-Decimal (BCD) conversion, as specified in Table 6.3.1.1-2.
 - b. The last three digits are mapped into ten bits by the coding algorithm described in 1.

Table 6.3.1.1-2. BCD Mapping

| Decimal Digit | Binary Number |
|---------------|---------------|
| 1 | 0001 |
| 2 | 0010 |
| 3 | 0011 |
| 4 | 0100 |
| 5 | 0101 |
| 6 | 0110 |
| 7 | 0111 |
| 8 | 1000 |
| 9 | 1001 |
| 0 | 1010 |

The following example illustrates the IMSI_T_S2_p and IMSI_T_S1_p calculation procedure. Let the IMSI_T be the 9-digit number 123456789. Since the IMSI_T has fewer than ten digits, the nine least significant digits of the IMSI_T_S are equal to the IMSI_T digits and the most significant IMSI_T_S digit is set to zero. So the 10-digit IMSI_T_S is 012 345 6 789. IMSI_T_S2_p and IMSI_T_S1_p are calculated as follows:

- IMSI_T_S2_p. The ten-bit IMSI_T_S2_p is derived from the first three digits of the IMSI_T_S (i.e., 012):
 - a. D1 = 10; D2 = 1; D3 = 2.
 - b. $100 \times D1 + 10 \times D2 + D3 - 111 = 100 \times 10 + 10 \times 1 + 2 - 111 = 901$.
 - c. 901 in binary is '11 1000 0101'.
 Therefore, IMSI_T_S2_p is '11 1000 0101'.
- IMSI_T_S1_p. The ten most significant bits of IMSI_T_S1_p are derived from the second three digits of the IMSI_T_S (i.e., 345):

a. $D_1 = 3; D_2 = 4; D_3 = 5$.

b. $100 \times D_1 + 10 \times D_2 + D_3 - 111 = 100 \times 3 + 10 \times 4 + 5 - 111 = 234$.

c. 234 in binary is '0011 1010 10'.

The next four most significant bits of IMSI_T_S1_p are derived from the thousands digit of the IMSI_T_S (i.e., 6) by BCD conversion: 6 in BCD is '0110'.

The ten least significant bits of IMSI_T_S1_p are derived from the last three digits of the IMSI_T_S (i.e., 789):

a. $D_1 = 7; D_2 = 8; D_3 = 9$.

b. $100 \times D_1 + 10 \times D_2 + D_3 - 111 = 100 \times 7 + 10 \times 8 + 9 - 111 = 678$.

c. 678 in binary is '10 1010 0110'.

Therefore, IMSI_T_S1_p is '0011 1010 1001 1010 1010 0110'.

6.3.1.2 Encoding of IMSI_M_11_12 and IMSI_T_11_12

The IMSI_M_11_12 and IMSI_T_11_12 binary mapping is defined as follows:

1. Represent the 11th digit as D_{11} and the 12th digit as D_{12} with the digit equal to zero being given the value of ten.
2. Compute $10 \times D_{12} + D_{11} - 11$.
3. Convert the result in step 2 to binary by a standard decimal-to-binary conversion as described in Table 6.3.1.1-1 and limit the resulting number to the 7 least significant bits.

6.3.1.3 Encoding of the MCC_M and MCC_T

The MCC_M and MCC_T binary mapping is defined as follows:

1. Represent the 3-digit Mobile Country Code as $D_1 D_2 D_3$ with the digit equal to zero being given the value of ten.
2. Compute $100 \times D_1 + 10 \times D_2 + D_3 - 111$.
3. Convert the result in step (2) to binary by a standard decimal-to-binary conversion as described in Table 6.3.1.1-1.

6.3.1.4 Mobile Directory Number

A Mobile Directory Number (MDN) is a dialable number associated with the mobile station through a service subscription. A Mobile Directory Number is not necessarily the same as the mobile station identification on the air interface, i.e., MIN, IMSI_M or IMSI_T. An MDN consists of up to 15 digits. The mobile station should have memory to store at least one Mobile Directory Number (see Table F.3-1).

6.3.2 Electronic Serial Number

The ESN is a 32-bit binary number that uniquely identifies the mobile station to any wireless system.

6.3.3 Station Class Mark

See 2.3.3 when operating in the 800 MHz analog mode.

Class-of-station information referred to as the station class mark (SCM_p) must be stored in a mobile station. The digital representation of this class mark for Band Class 0 and Band Class 1 is specified in Table 6.3.3-1.

Table 6.3.3-1. Station Class Mark

| Function | Bit(s) | Setting | |
|---|--------|---------------|----------|
| Extended SCM Indicator | 7 | Band Class 0 | 0XXXXXXX |
| | | Band Class 1 | 1XXXXXXX |
| Dual Mode | 6 | CDMA Only | X0XXXXXX |
| | | Dual Mode | X1XXXXXX |
| Slotted Class | 5 | Non-Slotted | XX0XXXXX |
| | | Slotted | XX1XXXXX |
| IS-54 Power Class | 4 | Always 0 | XXX0XXXX |
| 25 MHz Bandwidth | 3 | Always 1 | XXXX1XXX |
| Transmission | 2 | Continuous | XXXXX0XX |
| | | Discontinuous | XXXXX1XX |
| Power Class for Band Class 0 Analog Operation | 1 - 0 | Class I | XXXXXX00 |
| | | Class II | XXXXXX01 |
| | | Class III | XXXXXX10 |
| | | Reserved | XXXXXX11 |

If the mobile station supports analog mode operation in Band Class 0, the mobile station shall set the Power Class function bits to reflect its analog power class at Band Class 0, regardless of the band class on which it is operating; otherwise, the mobile station shall set these bits to '00'.

6.3.4 Registration Memory

See 2.3.4 when operating in the 800 MHz analog mode.

The mobile station shall have memory to store one element in the zone-based registration list $ZONE_LIST_{s-p}$ (see 6.6.5.1.5 and 6.6.5.5). This stored element shall include both REG_ZONE and the corresponding (SID, NID) pair. The data retention time under power-off conditions shall be at least 48 hours. If, after 48 hours, the data integrity cannot be guaranteed, then the entry in $ZONE_LIST_{s-p}$ shall be deleted upon power-on.

The mobile station shall have memory to store one element in the system/network registration list $SID_NID_LIST_{s-p}$ (see 6.6.5.1.5 and 6.6.5.5). The data retention time under power-off conditions shall be at least 48 hours. If, after 48 hours, the data integrity cannot be guaranteed, then the entry in $SID_NID_LIST_{s-p}$ shall be deleted upon power-on.

1 The mobile station shall have memory to store the distance-based registration variables
 2 BASE_LAT_REG_{s-p}, BASE_LONG_REG_{s-p}, and REG_DIST_REG_{s-p} (see 6.6.5.1.4 and
 3 6.6.5.5). The data retention time under power-off conditions shall be at least 48 hours. If,
 4 after 48 hours, the data integrity cannot be guaranteed, then REG_DIST_REG_{s-p} shall be
 5 set to zero upon power-on.

6 6.3.5 Access Overload Class

7 See 2.3.5 when operating in the 800 MHz analog mode.

8 The 4-bit access overload class indicator (ACCOLC_p) is used to identify which overload
 9 class controls access attempts by the mobile station and is used to identify redirected
 10 overload classes in global service redirection.

11 The mobile station shall store 4-bit access overload class (ACCOLC_p). Mobile stations that
 12 are not for test or emergency use should be assigned to overload classes ACCOLC 0
 13 through ACCOLC 9. For mobile stations that are classified as overload classes ACCOLC 0
 14 through ACCOLC 9, the mobile station's 4-bit access overload class indicator (ACCOLC_p)
 15 shall be automatically derived from the last digit of the associated decimal representation of
 16 the IMSI_M by a decimal to binary conversion as specified in Table 6.3.5-1. When a mobile
 17 station's IMSI_M is updated, the mobile station shall re-calculate the ACCOLC_p as
 18 indicated above. Mobile stations designated for test use should be assigned to ACCOLC 10;
 19 mobile stations designated for emergency use should be assigned to ACCOLC 11. ACCOLC
 20 12 through ACCOLC 15 are reserved.¹⁵ Programming the 4-bit ACCOLC_p for overload
 21 classes ACCOLC 10 through ACCOLC 15 as specified in Table 6.3.5-2 shall require a
 22 special facility only available to equipment manufacturers and system operators.

23 The content of ACCOLC_p shall not be visible through the mobile station's display.

¹⁵ For more information, refer to TSB16.

Table 6.3.5-1. ACCOLC_p Mapping for ACCOLC 0 through ACCOLC 9

| Last Digit of the Decimal Representation of the IMSI | ACCOLC _p |
|--|---------------------|
| 0 | 0000 |
| 1 | 0001 |
| 2 | 0010 |
| 3 | 0011 |
| 4 | 0100 |
| 5 | 0101 |
| 6 | 0110 |
| 7 | 0111 |
| 8 | 1000 |
| 9 | 1001 |

Table 6.3.5-2. ACCOLC_p Mapping for ACCOLC 10 through ACCOLC 15

| Overload Class | ACCOLC _p |
|----------------|---------------------|
| 10 | 1010 |
| 11 | 1011 |
| 12 | 1100 |
| 13 | 1101 |
| 14 | 1110 |
| 15 | 1111 |

6.3.6 Reserved

6.3.7 Reserved

6.3.8 Home System and Network Identification

In addition to the HOME_SID_p parameter that the mobile station stores for 800 MHz analog operation (see 2.3.8), the mobile station shall provide memory to store at least one home (SID_p, NID_p) pair. The mobile station shall also provide memory to store the 1-bit parameters MOB_TERM_HOME_p, MOB_TERM_FOR_SID_p, and MOB_TERM_FOR_NID_p (see 6.6.5.3).

6.3.9 Local Control Option

If the mobile station supports the local control option, a means shall be provided within the mobile station to enable or disable the local control option.

6.3.10 Preferred Operation Selection

6.3.10.1 Preferred System

If the mobile station supports operation in Band Class 0, a means shall be provided within the mobile station to identify the preferred system. In addition, the mobile station may provide a means for allowing operation only with System A or System B.

6.3.10.2 Preferred CDMA or Analog

If the mobile station supports operation in Band Class 0, a means may be provided within the mobile station to identify the preferred operation type as either CDMA mode or analog mode. In addition, the mobile station may provide a means for allowing operation only in the preferred mode.

6.3.11 Discontinuous Reception

The mobile station shall provide memory to store the preferred slot cycle index, $SLOT_CYCLE_INDEX_p$ (see 6.6.2.1.1.3.2).

6.3.12 Authentication, Encryption of Signaling Information/User Data and Voice Privacy

6.3.12.1 Authentication

Authentication is the process by which information is exchanged between a mobile station and base station for the purpose of confirming the identity of the mobile station. A successful outcome of the authentication process occurs only when it can be demonstrated that the mobile station and base station possess identical sets of shared secret data.

The authentication algorithms are described in "Common Cryptographic Algorithms." The interface (input and output parameters) for the algorithms is described in "Interface Specification for Common Cryptographic Algorithms." Table 6.3.12.1-1 summarizes the setting of the input parameters of the Auth_Signature procedure for each of its uses in this standard.

For authentication purposes, the mobile station shall use IMSI_M if it is programmed; otherwise, the mobile station shall use IMSI_T. The base station uses the IMSI selected according to the same criteria.

Table 6.3.12.1-1. Auth_Signature Input Parameters

| Procedure | RAND_CHALLENGE | ESN | AUTH_DATA | SSD_AUTH | SAVE_REGISTERS |
|---|--------------------------------|------------------|------------------|-----------------|-----------------------|
| Registration (6.3.12.1.4) | RAND _s | ESN _p | IMSI_S1 | SSD_A | FALSE |
| Unique Challenge (6.3.12.1.5) | RANDU and 8 LSBs of IMSI_S2 | ESN _p | IMSI_S1 | SSD_A | FALSE |
| Originations (6.3.12.1.6) | RAND _s | ESN _p | Digits | SSD_A | TRUE |
| Terminations (6.3.12.1.7) | RAND _s | ESN _p | IMSI_S1 | SSD_A | TRUE |
| Mobile Station Data Bursts (6.3.12.1.8) | RAND _s | ESN _p | Digits | SSD_A | FALSE |
| Base Station Challenge (6.3.12.1.9) | RANDBS | ESN _p | IMSI_S1 | SSD_A_ NEW | FALSE |
| TMSI Assignment (6.3.12.1.10) | RAND _s | ESN _p | IMSI_S1 | SSD_A | FALSE |
| PACA Cancellation (6.3.12.1.11) | RAND _s | ESN _p | IMSI_S1 | SSD_A | FALSE |

6.3.12.1.1 Shared Secret Data (SSD)

SSD is a 128-bit quantity that is stored in semi-permanent memory in the mobile station and is readily available to the base station. As depicted in Figure 6.3.12.1.1-1, SSD is partitioned into two distinct subsets. Each subset is used to support a different process.

| | | |
|---------------|-------|-------|
| Contents | SSD_A | SSD_B |
| Length (bits) | 64 | 64 |

Figure 6.3.12.1.1-1. Partitioning of SSD

SSD_A is used to support the authentication procedures and SSD_B is used to support voice privacy (see 6.3.12.3) and message encryption (see 6.3.12.2). SSD is generated according to the procedure specified in 6.3.12.1.9. The SSD shall not be accessible to the user.

6.3.12.1.2 Random Challenge Memory (RAND)

See 2.3.12.1.2 when operating in 800 MHz analog mode.

RAND is a 32-bit value held in the mobile station. When operating in CDMA mode, it is equal to the RAND value received in the last *Access Parameters Message* (see 7.7.2.3.2.2) of the CDMA Paging Channel.

RAND_S is used in conjunction with SSD_A and other parameters, as appropriate, to authenticate mobile station originations, terminations and registrations.

6.3.12.1.3 Call History Parameter (COUNT_{S-P})

See 2.3.12.1.3 when operating in 800 MHz analog mode.

Count_{S-P} is a modulo-64 count held in the mobile station. COUNT_{S-P} is updated by the mobile station when a *Parameter Update Order* is received on the CDMA Forward Traffic Channel (see 7.7.4).

6.3.12.1.4 Authentication of Mobile Station Registrations

The following authentication procedures shall be performed when AUTH_S is set to '01' (standard authentication mode), and the mobile station attempts to register (by sending a *Registration Message* on the Access Channel).

The mobile station shall set the input parameters of the Auth_Signature procedure (see "Interface Specification for Common Cryptographic Algorithms," section 2.3) as illustrated in Figure 6.3.12.1.4-1.

The mobile station shall set the SAVE_REGISTERS input parameter to FALSE.

The mobile station shall then execute the Auth_Signature procedure. The 18-bit output AUTH_SIGNATURE shall be used to fill the AUTHR field of the *Registration Message*. The RANDC (eight most significant bits of RAND) and COUNT fields of the message shall be filled with the current values stored in the mobile station.

The base station compares the received value of RANDC to the most significant eight bits of its internally stored value of RAND.

The base station may also compare the received value of COUNT with its internally stored value associated with the received IMSI/ESN.

The base station computes the value of AUTHR in the same manner as the mobile station, but using its internally stored value of SSD_A. The base station compares its computed value of AUTHR to the value received from the mobile station.

If any of the comparisons fail, the base station may deem the registration attempt unsuccessful, initiate the Unique Challenge-Response Procedure (see 6.3.12.1.5) or commence the process of updating SSD (see 6.3.12.1.9).

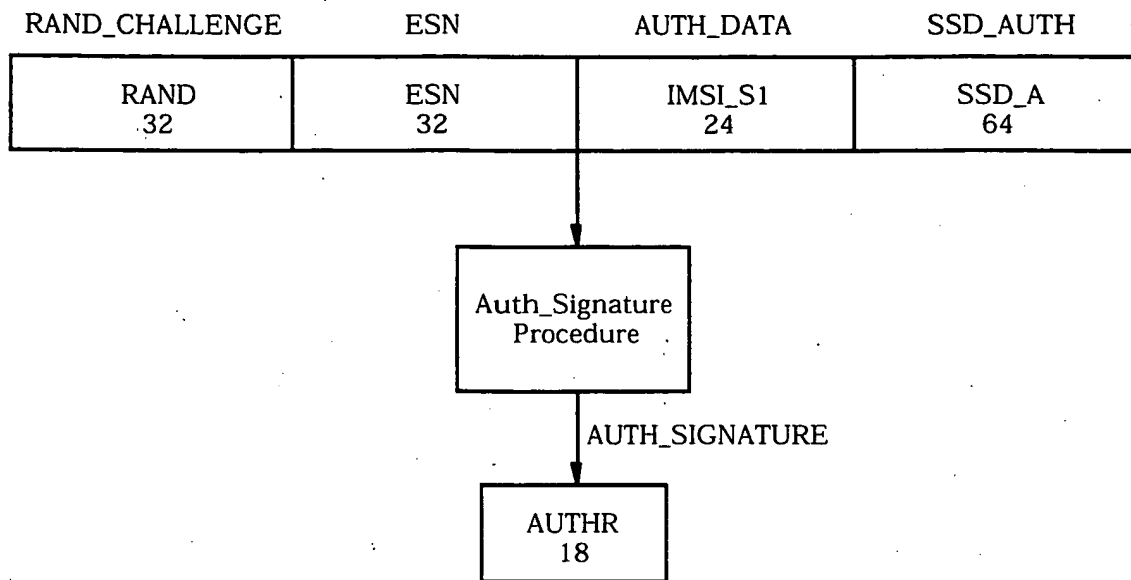


Figure 6.3.12.1.4-1. Computation of AUTHR for Authentication of Mobile Station Registrations

6.3.12.1.5 Unique Challenge-Response Procedure

The Unique Challenge-Response Procedure is initiated by the base station and can be carried out either on the Paging and Access Channels, or on the Forward and Reverse Traffic Channels. The procedure is as follows:

The base station generates the 24-bit quantity RANDU and sends it to the mobile station in the *Authentication Challenge Message* on either the Paging Channel or the Forward Traffic Channel. Upon receipt of the *Authentication Challenge Message*, the mobile station shall set the input parameters of the Auth_Signature procedure (see "Interface Specification for Common Cryptographic Algorithms," section 2.3) as illustrated in Figure 6.3.12.1.5-1. The 24 most significant bits of the RAND_CHALLENGE input parameter shall be filled with RANDU, and the 8 least significant bits of RAND_CHALLENGE shall be filled with the 8 least significant bits of IMSI_S2.

The mobile station shall set the SAVE_REGISTERS input parameter to FALSE.

The mobile station shall then execute the Auth_Signature procedure. The 18-bit output AUTH_SIGNATURE shall be used to fill the AUTHU field of the *Authentication Challenge Response Message*, which shall be sent to the base station.

The base station computes the value of AUTHU in the same manner as the mobile station, but using its internally stored value of SSD_A. The base station compares its computed value of AUTHU to the value received from the mobile station. If the comparison fails, the base station may deny further access attempts by the mobile station, drop the call in progress, or initiate the process of updating SSD (see 6.3.12.1.9).

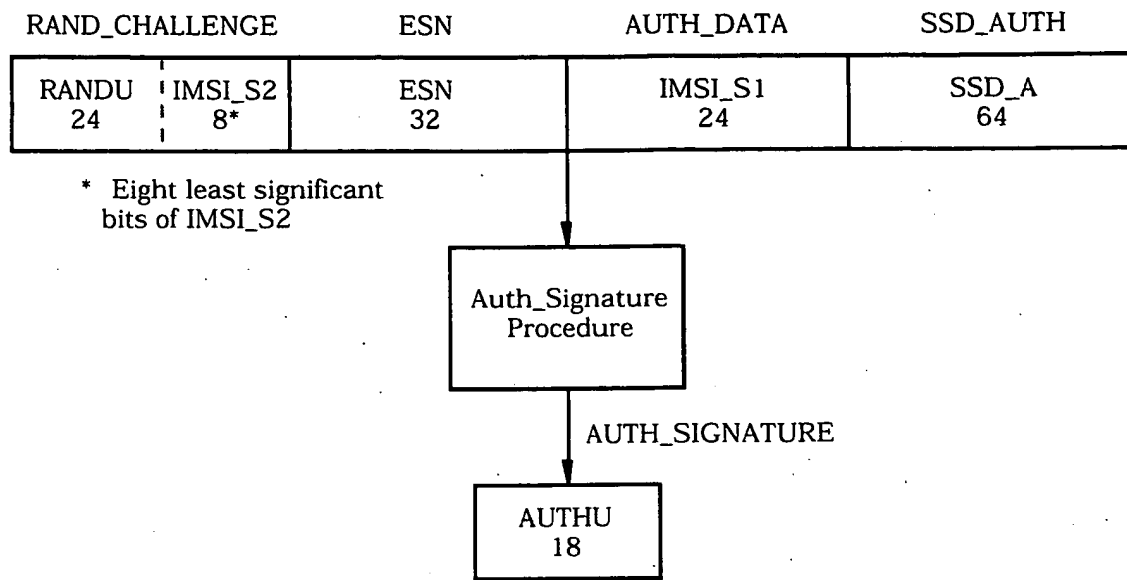


Figure 6.3.12.1.5-1. Computation of AUTHU for the Unique Challenge-Response Procedure

6.3.12.1.6 Authentication of Mobile Station Originations

When AUTH_s is set to '01' (standard authentication mode), and the mobile station attempts to originate a call (by sending an *Origination Message* on the Access Channel), the following authentication procedures shall be performed:

The mobile station shall set the input parameters of the Auth_Signature procedure (see "Interface Specification for Common Cryptographic Algorithms," section 2.3) as illustrated in Figure 6.3.12.1.6-1. The AUTH_DATA input parameter shall contain the last six digits contained in the CHAR_i fields of the *Origination Message*, encoded as follows: If a CHAR_i field represents one of the digits 0-9, * or #, the digit shall be encoded according to Table 6.7.1.3.2.4-4. If the CHAR_i field represents any other character, the CHAR_i field shall be converted to its decimal equivalent (treated as an unsigned binary number), and the digit shall be the least significant decimal digit of the decimal equivalent, encoded according to Table 6.7.1.3.2.4-4.

If fewer than six digits are included in the *Origination Message*, the most significant bits of IMSI_S1 shall be used to replace the missing digits. The exact procedure is that IMSI_S1 is used to initially fill the AUTH_DATA input parameter and then the last dialed digits entered by the subscriber are used to replace all or part of this initial value. If a full 6 digits are dialed, the first digit of the 6 that were dialed is used as the most significant 4 bits of AUTH_DATA, the second digit is the next less-significant 4 bits of AUTH_DATA, and so forth. If fewer than 6 digits are dialed, then the least significant 4 bits of AUTH_DATA are the last dialed digit, the second-last dialed digit becomes the next more-significant 4 bits of AUTH_DATA, and so on up to the first of the dialed digits.

The mobile station shall set the SAVE_REGISTERS input parameter to TRUE.

The mobile station shall then execute the Auth_Signature Procedure. The 18-bit output AUTH_SIGNATURE shall be used to fill the AUTHR field of the *Origination Message*. The RANDC (eight most significant bits of RAND) and COUNT fields of the message shall be filled with the current values stored in the mobile station.

The base station compares the received value of RANDC to the most significant eight bits of its internally stored value of RAND.

The base station may also compare the received value of COUNT with its internally stored value associated with the received IMSI/ESN.

The base station computes the value of AUTHR in the same manner as the mobile station, but using its internally stored value of SSD_A. The base station compares its computed value of AUTHR to the value received from the mobile station.

If the comparisons executed at the base station are successful, the base station may initiate the appropriate channel assignment procedures. After channel assignment, the base station may issue a *Parameter Update Order* on the Forward Traffic Channel, updating the value of COUNT_{S-P} in the mobile station.

If any of the comparisons fail, the base station may deny service, initiate the Unique Challenge-Response Procedure (see 6.3.12.1.5) or commence the process of updating SSD (see 6.3.12.1.9).

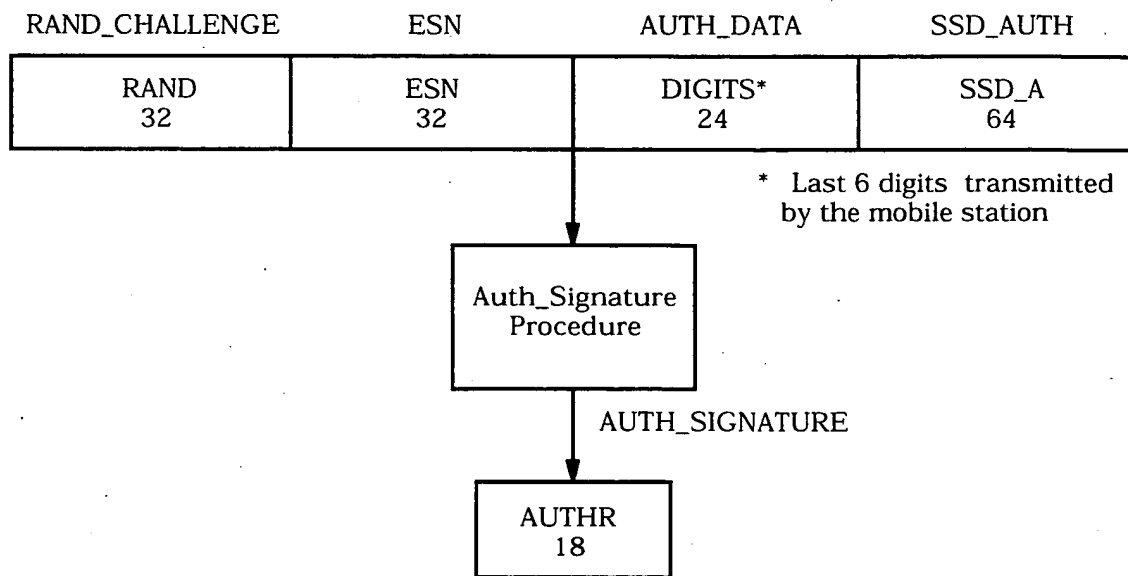


Figure 6.3.12.1.6-1. Computation of AUTHR for Authentication of Mobile Station Originations

6.3.12.1.7 Authentication of Mobile Station Terminations

When AUTH_S is set to '01' (standard authentication mode), and the mobile station responds to a page (by sending a *Page Response Message* on the Access Channel), the following authentication procedures shall be performed:

The mobile station shall set the input parameters of the Auth_Signature procedure (see "Interface Specification for Common Cryptographic Algorithms," section 2.3) as illustrated in Figure 6.3.12.1.7-1.

The mobile station shall set the SAVE_REGISTERS input parameter to TRUE.

The mobile station shall then execute the Auth_Signature procedure. The 18-bit output AUTH_SIGNATURE shall be used to fill the AUTHR field of the *Page Response Message*. The RANDC (eight most significant bits of RAND) and COUNT fields of the message shall be filled with the current values stored in the mobile station.

The base station compares the received value of RANDC to the eight most significant bits of its internally stored value of RAND.

The base station may also compare the received value of COUNT with its internally stored value associated with the received IMSI/ESN.

The base station computes the value of AUTHR in the same manner as the mobile station, but using its internally stored value of SSD_A. The base station compares its computed value of AUTHR to the value received from the mobile station.

If the comparisons executed at the base station are successful, the base station may initiate the appropriate channel assignment procedures. After channel assignment, the base station may issue a *Parameter Update Order* on the Forward Traffic Channel, updating the value of COUNT_{S-p} in the mobile station.

If any of the comparisons fail, the base station may deny service, initiate the Unique Challenge Response Procedure (see 6.3.12.1.5) or commence the process of updating SSD (see 6.3.12.1.9).

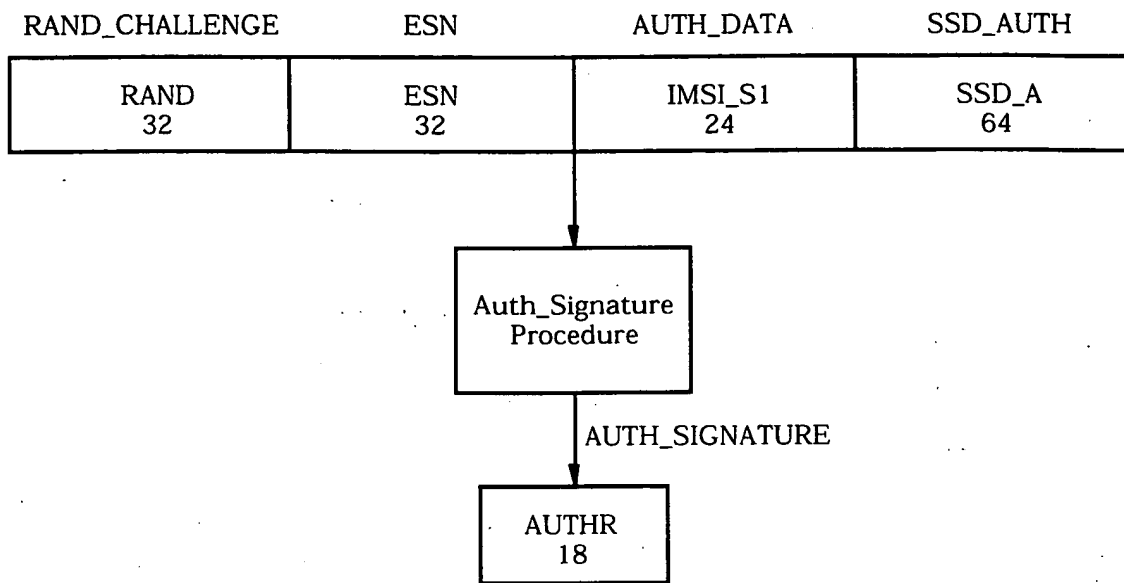


Figure 6.3.12.1.7-1. Computation of AUTHR for Authentication of Mobile Station Terminations

6.3.12.1.8 Authentication of Mobile Station Data Bursts

When $AUTH_S$ is set to '01' (standard authentication mode), and the mobile station attempts to send a *Data Burst Message* on the Access Channel, the following authentication procedures shall be performed:

The mobile station shall set the input parameters of the Auth_Signature procedure (see "Interface Specification for Common Cryptographic Algorithms," section 2.3) as illustrated in Figure 6.3.12.1.8-1.

The AUTH_DATA input is generated by first filling the AUTH_DATA parameter with the 24 bits of IMSI_S1 and then replacing part or all of the pre-filled value with up to six 4-bit digits that are provided by the procedure (according to BURST_TYPE) requesting the *Data Burst Message*.

Specifically, the mobile station shall generate the AUTH_DATA input as follows:

1. Let AUTH_DATA = IMSI_S1.
2. The requesting procedure shall supply a sequence of digits that is 0 to 6 digits in length. Each digit shall be represented as a 4-bit binary value, encoded according to Table 6.7.1.3.2.4-4.
3. The least significant digit in the sequence shall replace the least significant four bits of AUTH_DATA, the next-least significant digit in the sequence shall replace the next-least significant four bits of AUTH_DATA and so on until all of the supplied digits in the sequence have been incorporated into the value of AUTH_DATA.

The mobile station shall set the SAVE_REGISTERS input parameter to FALSE.

The mobile shall then execute the Auth_Signature Procedure. The 18-bit output AUTH_SIGNATURE shall be used to fill the AUTHR field of the *Data Burst Message*. The RANDC (eight most significant bits of RAND) and COUNT fields of the message shall be filled with the current values stored in the mobile station.

The base station compares the received value of RANDC to the most significant eight bits of its internally stored value of RAND.

The base station may also compare the received value of COUNT with its internally stored value associated with the received IMSI/ESN.

The base station computes the value of AUTHR in the same manner as the mobile station, but using its internally stored value of SSD_A, and by generating the AUTH_DATA input in the same manner as described above for the mobile station. The base station compares its computed value of AUTHR to the value received from the mobile station.

If the comparisons executed at the base station are successful, the base station may process the message.

If any of the comparisons fail, the base station may ignore the message, initiate the Unique Challenge-Response Procedure (see 6.3.12.1.5) or commence the process of updating SSD (see 6.3.12.1.9).

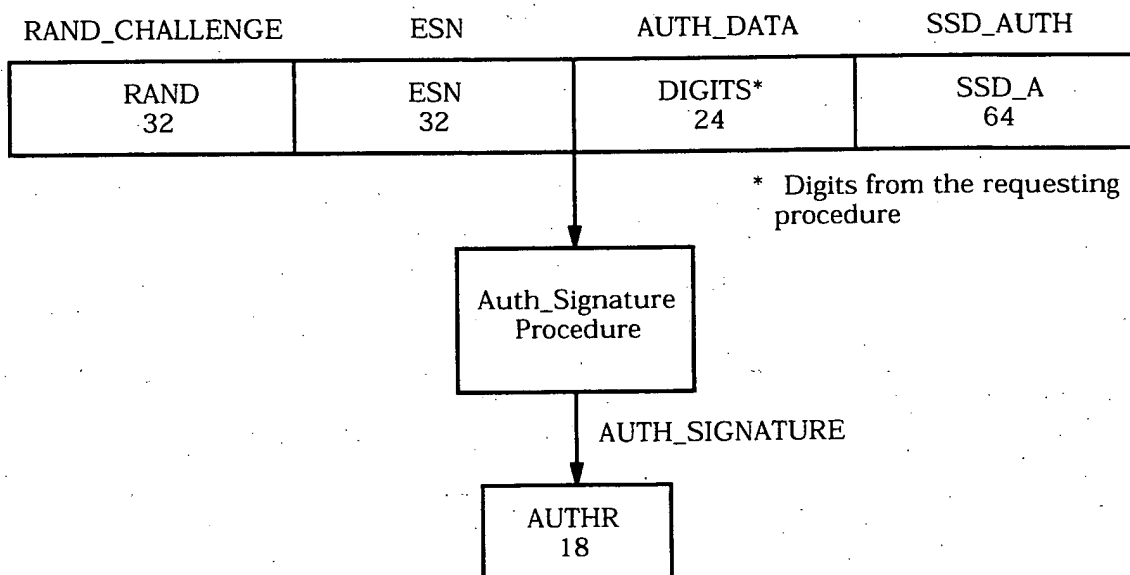


Figure 6.3.12.1.8-1. Computation of AUTHR for Authentication of Mobile Station Data Bursts

6.3.12.1.9 Updating the Shared Secret Data (SSD)

SSD is updated using the SSD_Generation procedure (see "Interface Specification for Common Cryptographic Algorithms," section 2.2.1), initialized with mobile station specific information, random data and the mobile station's A-key. The A-key is 64 bits long. It is assigned to the mobile station and is stored in the mobile station's permanent security and identification memory. The A-key is known only to the mobile station and to its associated Home Location Register/Authentication Center (HLR/AC) (see EIA/TIA-41). Non-manual methods, such as described in EIA/TIA-683-A, are preferred for entry of the A-key into the mobile station. TSB50 describes a manual method of entry that may be used when automated methods are not available.

The SSD update procedure is performed as follows (see Figure 6.3.12.1.9-1):

The base station sends an *SSD Update Message* on either the Paging Channel or the Forward Traffic Channel. The RANDSSD field of the *SSD Update Message* contains the same value used for the HLR/AC computation of SSD.

Upon receipt of the *SSD Update Message* the mobile station shall set the input parameters of the SSD_Generation procedure (see "Interface Specification for Common Cryptographic Algorithms," section 2.2.1) as illustrated in Figure 6.3.12.1.9-2. The mobile station shall then execute the SSD_Generation procedure. The mobile station shall set SSD_A_NEW and SSD_B_NEW to the outputs of the SSD_Generation procedure.

The mobile station shall then select a 32-bit random number, RANDBS, and shall send it to the base station in a *Base Station Challenge Order* on the Access Channel or Reverse Traffic Channel.

Both the mobile station and the base station shall then set the input parameters of the Auth_Signature procedure (see "Interface Specification for Common Cryptographic Algorithms," section 2.3) as illustrated in Figure 6.3.12.1.9-3 and shall execute the Auth_Signature procedure.

The mobile station and base station shall set the SAVE_REGISTERS input parameter to FALSE.

The mobile station and base station shall execute the Auth_Signature procedure. AUTHBS is set to the 18-bit result AUTH_SIGNATURE. The base station sends its computed value of AUTHBS to the mobile station in a *Base Station Challenge Confirmation Order* on the Paging Channel or the Forward Traffic Channel.

Upon receipt of the *Base Station Challenge Confirmation Order* the mobile station shall compare the received value of AUTHBS to its internally computed value. (If the mobile station receives a *Base Station Challenge Confirmation Order* when an SSD update is not in progress, the mobile station shall respond with an *SSD Update Rejection Order*.)

If the comparison is successful, the mobile station shall execute the SSD_Update procedure (see "Interface Specification for Common Cryptographic Algorithms," section 2.2.2) to set SSD_A and SSD_B to SSD_A_NEW and SSD_B_NEW, respectively. The mobile station shall then send an *SSD Update Confirmation Order* to the base station, indicating successful completion of the SSD update.

- 1 If the comparison is not successful, the mobile station shall discard SSD_A_NEW and
- 2 SSD_B_NEW. The mobile station shall then send an *SSD Update Rejection Order* to the
- 3 base station, indicating unsuccessful completion of the SSD update.
- 4 Upon receipt of the *SSD Update Confirmation Order*, the base station sets SSD_A and
- 5 SSD_B to the values received from the HLR/AC (see EIA/TIA/IS-41).
- 6 If the mobile station fails to receive the *Base Station Challenge Confirmation Order* within
- 7 T_{64m} seconds of when the acknowledgment to the *Base Station Challenge Order* was
- 8 received, the mobile station shall discard SSD_A_NEW and SSD_B_NEW. The mobile
- 9 station shall then terminate the SSD update process.

10

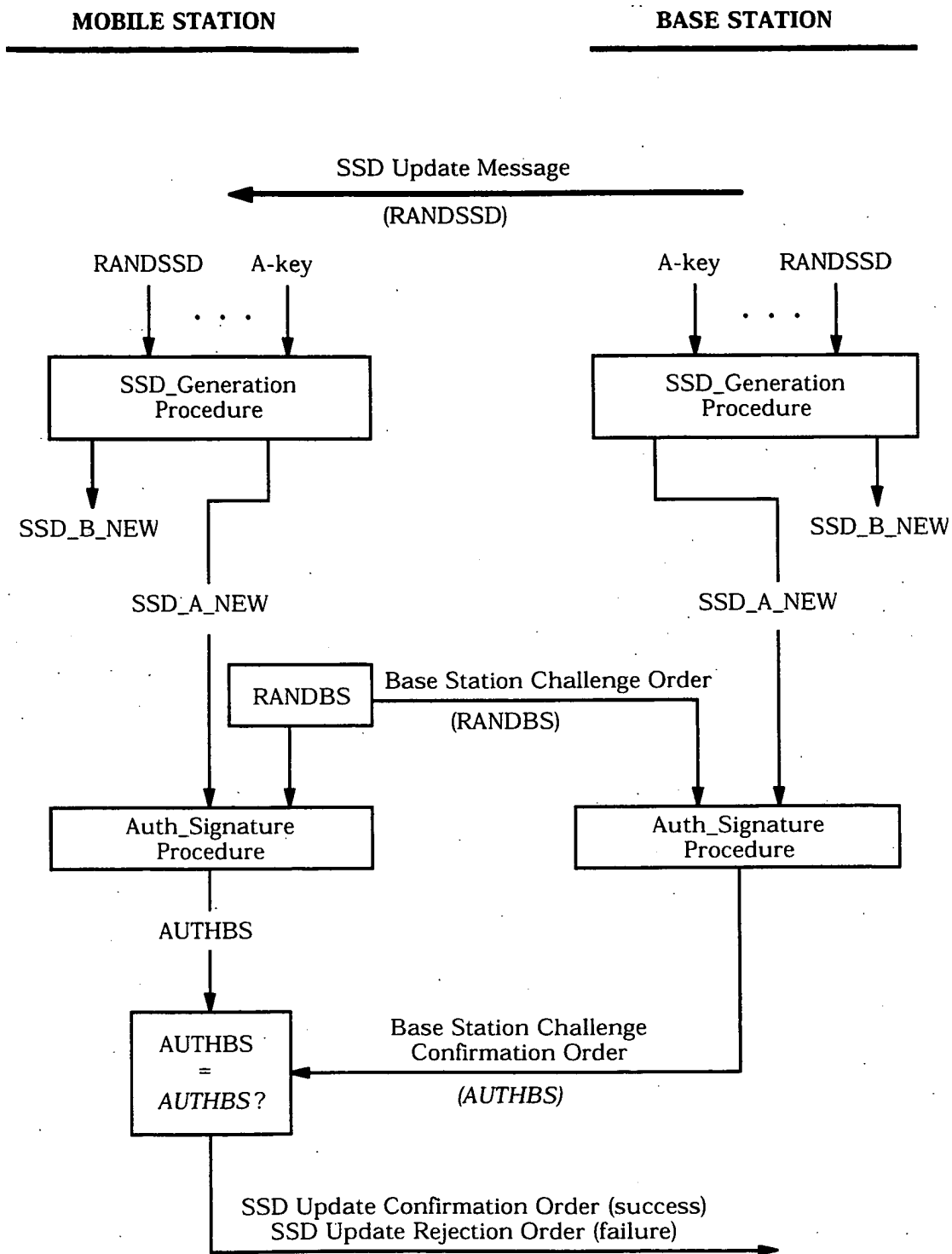


Figure 6.3.12.1.9-1. SSD Update Message Flow

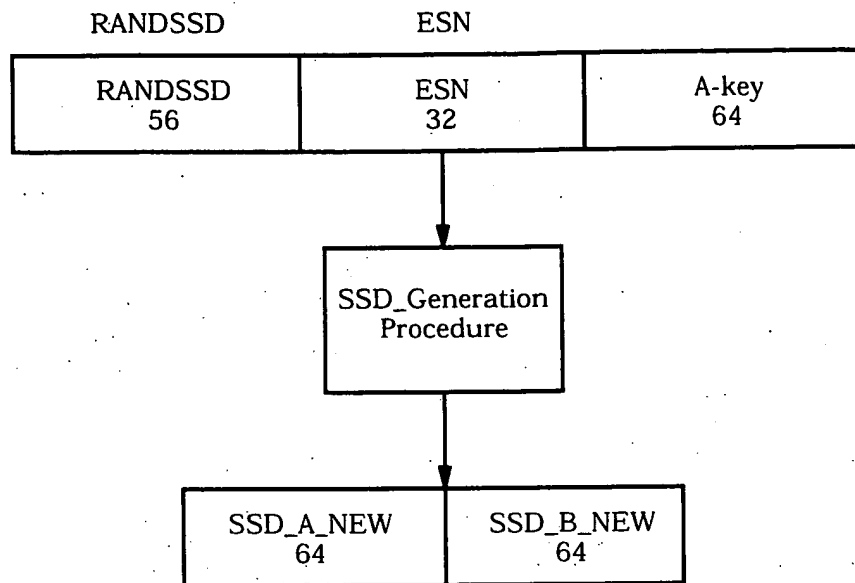


Figure 6.3.12.1.9-2. Computation of Shared Secret Data (SSD)

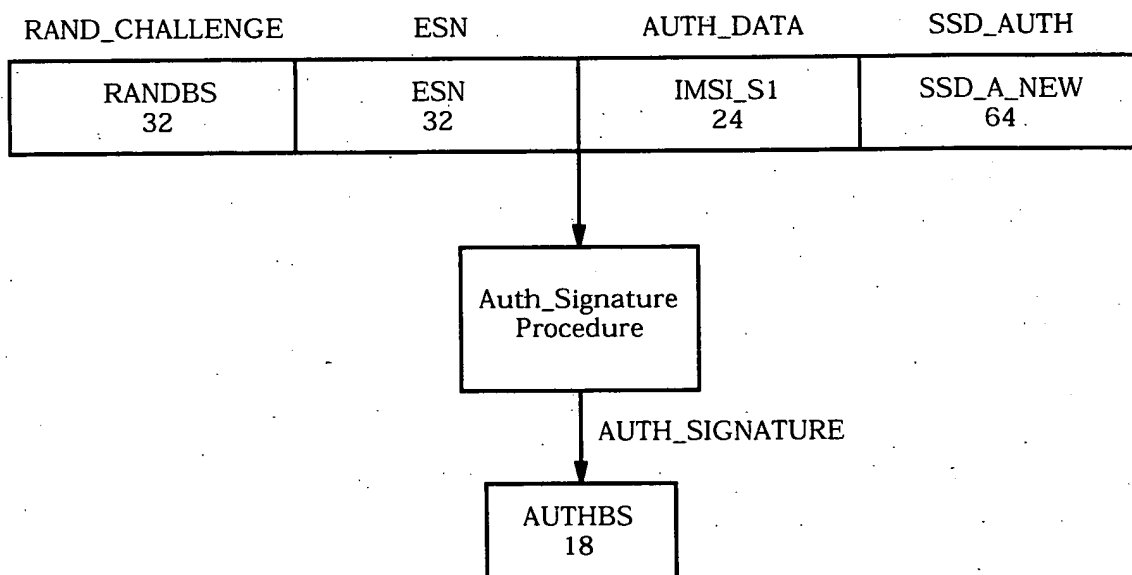


Figure 6.3.12.1.9-3. Computation of AUTHBS

6.3.12.1.10 Authentication of Temporary Mobile Station Identity (TMSI) Assignment

See 6.3.15 for an overview of TMSI.

The following authentication procedures shall be performed when AUTH_s is set to '01' (standard authentication mode), and the mobile station responds to a TMSI assignment (by sending a *TMSI Assignment Completion Message* on the Access Channel).

The mobile station shall set the input parameters of the Auth_Signature procedure (see "Interface Specification for Common Cryptographic Algorithms," section 2.3) as illustrated in Figure 6.3.12.1.10-1.

The mobile station shall set the SAVE_REGISTERS input parameter to FALSE.

The mobile station shall then execute the Auth_Signature procedure. The 18-bit output AUTH_SIGNATURE shall be used to fill the AUTHR field of the *TMSI Assignment Completion Message*. The RANDC (eight most significant bits of RAND) and COUNT fields of the message shall be filled with the current values stored in the mobile station.

The base station compares the received value of RANDC to the eight most significant bits of its internally stored value of RAND.

The base station may also compare the received value of COUNT with its internally stored value associated with the received IMSI/ESN.

The base station computes the value of AUTHR in the same manner as the mobile station, but using its internally stored value of SSD_A. The base station compares its computed value of AUTHR to the value received from the mobile station.

If any of the comparisons fail, the base station may deem the TMSI assignment unsuccessful, initiate the Unique Challenge-Response Procedure (see 6.3.12.1.5) or commence the process of updating SSD (see 6.3.12.1.9).

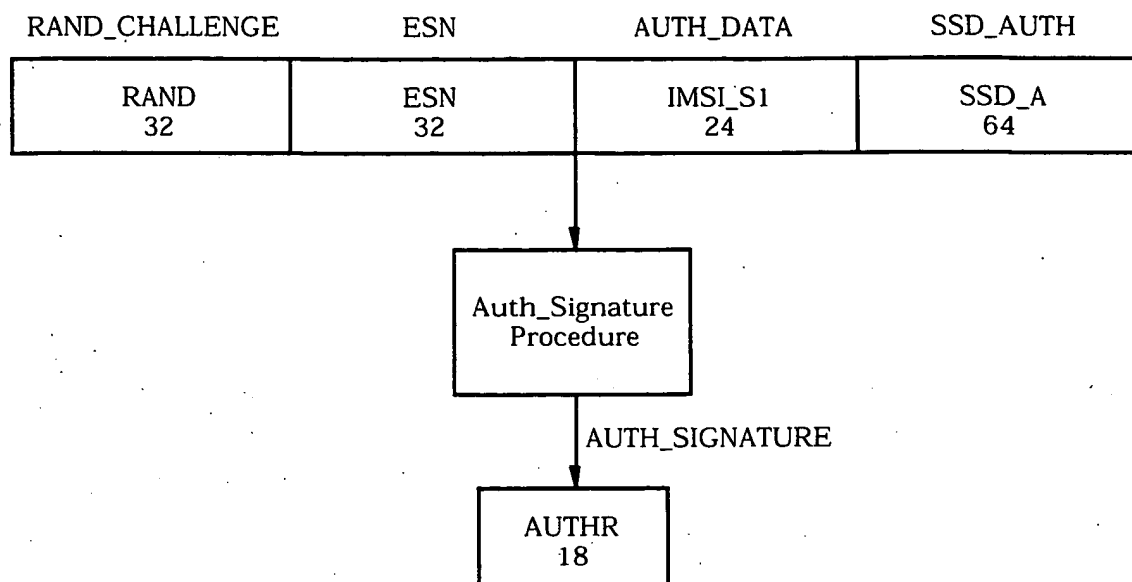


Figure 6.3.12.1.10-1. Computation of AUTHR for Authentication of TMSI Assignment

6.3.12.1.11 Authentication of PACA Cancellation

The following authentication procedures shall be performed when $AUTH_S$ is set to '01' (standard authentication mode), and the mobile station cancels a PACA call (by sending a *PACA Cancel Message* on the Access Channel).

The mobile station shall set the input parameters of the Auth_Signature procedure (see "Interface Specification for Common Cryptographic Algorithms," section 2.3) as illustrated in Figure 6.3.12.1.11-1.

The mobile station shall set the SAVE_REGISTERS input parameter to FALSE.

The mobile station shall then execute the Auth_Signature procedure. The 18-bit output AUTH_SIGNATURE shall be used to fill the AUTHR field of the *PACA Cancel Message*. The RANDC (eight most significant bits of RAND) and COUNT fields of the message shall be filled with the current values stored in the mobile station.

The base station compares the received value of RANDC to the eight most significant bits of its internally stored value of RAND.

The base station may also compare the received value of COUNT with its internally stored value associated with the received IMSI/ESN.

The base station computes the value of AUTHR in the same manner as the mobile station, but does so using its internally stored value of SSD_A. The base station compares its computed value of AUTHR to the value received from the mobile station.

If any of the comparisons fail, the base station may deem the PACA cancellation unsuccessful, initiate the Unique Challenge-Response Procedure (see 6.3.12.1.5) or commence the process of updating SSD (see 6.3.12.1.9).

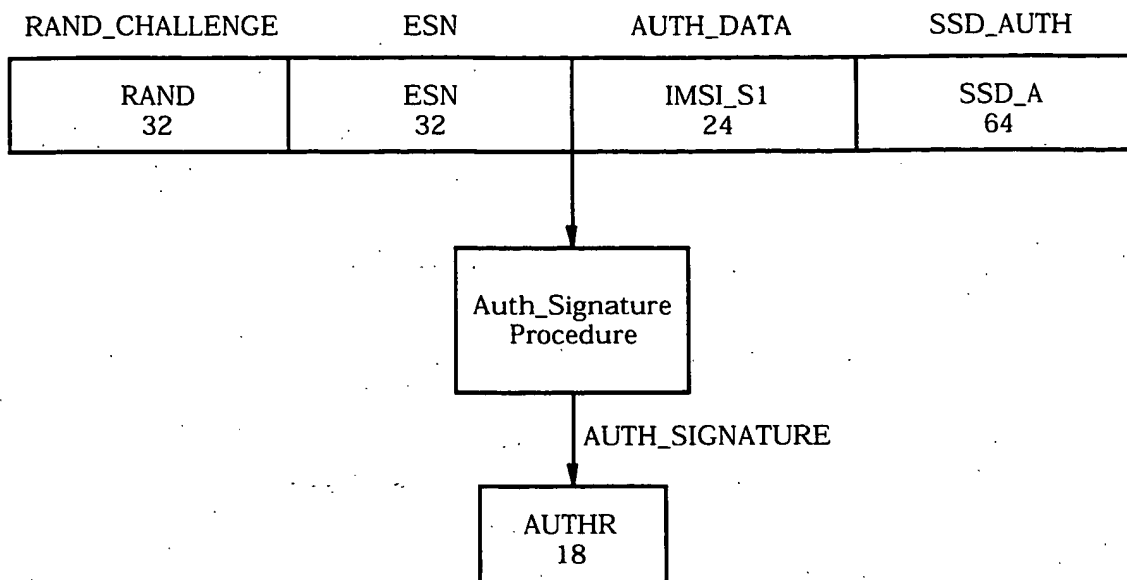


Figure 6.3.12.1.11-1. Computation of AUTHR for Authentication of PACA Cancellation

6.3.12.2 Signaling Message Encryption

In an effort to enhance the authentication process and to protect sensitive subscriber information (such as PINs), a method is provided to encrypt certain fields of selected Traffic Channel signaling messages. See Annex A for the list of messages and fields to be encrypted.

The message encryption algorithm is described in "Common Cryptographic Algorithms." The availability of encryption algorithm information is governed under the U.S. Export Administration Regulations. TIA acts as the focal point and facilitator for making such information available.

Messages shall not be encrypted if authentication is not performed (AUTH_S is set to '00'). See "Interface Specification for Common Cryptographic Algorithms" for details of the initialization and use of the encryption procedure.

Signaling message encryption is controlled for each call individually. The mobile station identifies its encryption capability in the ENCRYPTION_SUPPORTED field in the *Origination Message* and the *Page Response Message* as shown in 6.7.1.3.2.4-5. The initial encryption mode for the call is established by the value of the ENCRYPT_MODE field in the *Channel Assignment Message* or in the *Extended Channel Assignment Message*. If ENCRYPT_MODE is set to '00', message encryption is off. To turn encryption on after channel assignment, the base station sends one of the following Forward Traffic channel messages to the mobile station:

- 1 • *Extended Handoff Direction Message* with the ENCRYPT_MODE field set to '01' or
- 2 '10'
- 3 • *General Handoff Direction Message* with the ENCRYPT_MODE field set to '01' or '10'
- 4 • *Analog Handoff Direction Message* with the MEM field set to '1'
- 5 • *Message Encryption Mode Order* with the ENCRYPT_MODE field set to '01' or '10'

6 To turn signaling message encryption off, the base station sends one of the following
7 Forward Traffic Channel messages to the mobile station:

- 8 • *Extended Handoff Direction Message* with the ENCRYPT_MODE field set to '00'
- 9 • *General Handoff Direction Message* with the ENCRYPT_MODE field set to '00'
- 10 • *Analog Handoff Direction Message* with the MEM field set to '0'
- 11 • *Message Encryption Mode Order* with the ENCRYPT_MODE field set to '00'

12 Every Reverse Traffic Channel message contains an ENCRYPTION field which identifies the
13 message encryption mode active at the time the message was created (see 6.7.2.3.1.2).

14 6.3.12.3 Voice Privacy

15 Voice privacy is provided in the CDMA system by means of the private long code mask used
16 for PN spreading (see 6.1.3.1.8).

17 The generation of the private long code mask for the Fundamental Code Channel is
18 specified in Annex A.

19 Voice privacy is provided on the Traffic Channels only. All calls are initiated using the
20 public long code mask for PN spreading (see 6.1.3.1.8). The mobile station user may
21 request voice privacy during call setup using the *Origination Message* or *Page Response*
22 *Message*, and during Traffic Channel operation using the *Long Code Transition Request*
23 *Order*.

24 The transition to private long code mask shall not be performed if authentication is not
25 performed (AUTH_S is set to '00' or mobile station unable to perform authentication).

26 To initiate a transition to the private or public long code mask, either the base station or
27 the mobile station sends a *Long Code Transition Request Order* on the Traffic Channel. The
28 mobile station actions in response to receipt of this order are specified in 6.6.4, and the
29 base station actions in response to receipt of this order are specified in 7.6.4.

30 The base station can also cause a transition to the private or public long code mask by
31 sending the *Extended Handoff Direction Message* or the *General Handoff Direction Message*
32 with the PRIVATE_LCM bit set appropriately.

33 6.3.13 Lock and Maintenance Required Orders

34 The mobile station shall have memory to store the lock reason code (LCKRSN_P_{S-p}) received
35 in the *Lock Until Power-Cycled Order*. The data retention time under power-off conditions
36 shall be at least 48 hours.

1 The mobile station shall have memory to store the maintenance reason code (MAINTRSN_{S-p})
 2 received in the *Maintenance Required Order*. The data retention time under power-off
 3 conditions shall be at least 48 hours.

4 There are no requirements on the use of the lock and maintenance reason codes, and
 5 interpretation and use are implementation dependent.

6 6.3.14 Mobile Station Revision Identification

7 The mobile station shall provide memory to store the following parameters sent in the
 8 *Status Message*, the *Status Response Message*, or the *Extended Status Response Message*
 9 (*Terminal Information* information record):

- 10 • Mobile manufacturer code (MOB_MFG_CODE_p)
- 11 • Manufacturer's model number (MOB_MODEL_p)
- 12 • Firmware revision number (MOB_FIRM_REV_p)

13 In addition, the mobile station shall provide memory to store the following parameter for
 14 each supported band class:

- 15 • Protocol revision number (MOB_P_REV_p)

16 6.3.15 Temporary Mobile Station Identity

17 6.3.15.1 Overview

18 The Temporary Mobile Station Identity (TMSI) is a temporary locally assigned number used
 19 for addressing the mobile station. The mobile station obtains a TMSI when assigned by the
 20 base station. The TMSI as a number does not have any association with the mobile
 21 station's IMSI, ESN, or directory number all of which are permanent identifications.

22 A TMSI zone is an arbitrary set of base stations for the administrative assignment of TMSIs.
 23 A TMSI_CODE is uniquely assigned to a mobile station inside a TMSI zone. A TMSI zone is
 24 identified by the TMSI_ZONE field. The same TMSI_CODE may be reused to identify a
 25 different mobile station in a different TMSI zone. The pair (TMSI_ZONE, TMSI_CODE) is a
 26 globally unique identity for the mobile station. This pair is called the full TMSI. The
 27 TMSI_CODE can be two, three, or four octets in length. The TMSI_ZONE can range from 1
 28 to 8 octets in length. Figure 6.3.15-1 shows an example of a TMSI_ZONE where the
 29 TMSI_ZONE is a subset of the NID (see 6.6.5.2).

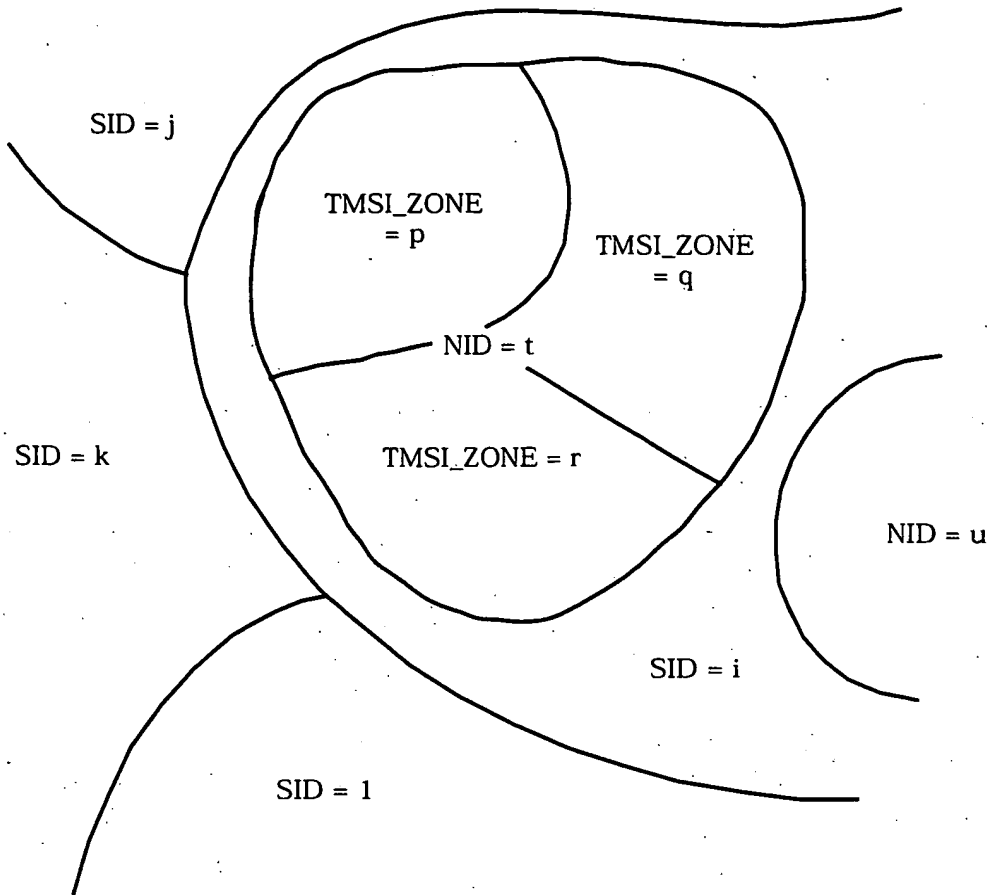


Figure 6.3.15-1. TMSI Zone Example

The base station sends a *TMSI Assignment Message* to assign a TMSI. In response, the mobile station sends a *TMSI Assignment Completion Message*. The base station instructs the mobile station to delete the TMSI by sending a *TMSI Assignment Message* with all the bits in the TMSI_CODE field set equal to '1'.

The TMSI expiration time is used to automatically delete the assigned TMSI. The mobile station obtains the expiration time when the TMSI is assigned in the *TMSI Assignment Message*. The mobile station compares the expiration time to the current System Time when it powers up and periodically during operation.

Whenever the mobile station sends its full TMSI, the mobile station sets a timer, called the full-TMSI timer. If the full-TMSI timer expires, the mobile station deletes the TMSI by setting all bits in the TMSI_CODE field to '1'.

6.3.15.2 TMSI Assignment Memory

The mobile station shall provide memory to store the following parameters:

- 4-bit assigning TMSI zone length (ASSIGNING_TMSI_ZONE_LEN_{s-p})
- 8-octet assigning TMSI zone (ASSIGNING_TMSI_ZONE_{s-p})

- 4-octet TMSI code (TMSI_CODE_{s-p})
- 3-octet TMSI expiration time (TMSI_EXP_TIME_{s-p})

6.4 Supervision

This section details the supervision mechanisms in CDMA. The time and numerical constant values (e.g., T_{30m} and N_{2m}) are given in Annex D.

6.4.1 Pilot Channel

The mobile station shall monitor the Pilot Channel at all times except when not receiving in the slotted mode. The mobile station shall measure the strength of the Pilot Channel as specified in 6.6.6.2.2.

6.4.2 Sync Channel

The mobile station shall check the CRC of all received Sync Channel messages (see 7.7.1.2.2). The mobile station shall consider any message with a CRC that checks to be valid. The mobile station shall ignore any message which is not valid.

6.4.3 Paging Channel

The mobile station shall check the CRC of all received Paging Channel messages (see 7.7.2.2.2). The mobile station shall consider any message with a CRC that checks to be valid. The mobile station shall ignore any message which is not valid.

If the mobile station is operating in the *Mobile Station Idle State*, it shall monitor the Paging Channel as specified in 6.6.2.1.1. The mobile station shall set a timer for T_{30m} seconds whenever it begins to monitor the Paging Channel. The mobile station shall reset the timer for T_{30m} seconds whenever it receives a valid message on the Paging Channel, whether addressed to the mobile station or not. The mobile station shall disable the timer when it is not monitoring the Paging Channel. If the timer expires, the mobile station shall declare a loss of the Paging Channel.

When in the *System Access State*, the mobile station shall monitor the Paging Channel at all times.

Whenever a valid message is received on the Paging Channel, whether addressed to the mobile station or not, the mobile station shall reset a timer for T_{72m} seconds if:

- ACCESS_HO_s is equal to '1' and ACCESS_HO_LIST contains more than one pilot,
- ACC_HO_LIST_UPD_s is equal to '1', and Access Probe Handoff is supported by the mobile station, or
- ACC_HO_LIST_UPD_s is equal to '0' and the following conditions are met:
 - ACCESS_HO_LIST contains more than one pilot
 - Access Probe Handoff is supported by the mobile station and is enabled by the base station.

Otherwise, the mobile station shall reset a timer for T_{40m} seconds (see 6.6.3.1.7). If the timer expires, the mobile station shall declare a loss of the Paging Channel.

If the timer for monitoring the Paging Channel in *System Access State* is set to T_{40m} and no valid Paging Channel message is received until T_{72m} seconds have elapsed, the mobile station shall disable the transmitter and shall continue to monitor the Paging Channel until the timer T_{40m} expires. If the mobile station is in the process of transmitting an access probe when T_{72m} seconds have elapsed, the mobile station shall finish transmitting the access probe before disabling the transmitter.

If a valid Paging Channel message is received before the timer T_{40m} expires, the mobile station shall disable the timer T_{40m} , re-enable the transmitter and resume operation. If the mobile station is resuming an access sub-attempt (see 6.6.3.1.1.1) interrupted by temporary loss of the Paging Channel, the mobile station shall resume operation from the beginning of the interrupted access probe sequence of the access sub-attempt. The mobile station shall transmit the first probe of the new access probe sequence immediately after re-enabling the transmitter. The mobile station shall not resume an interrupted access attempt more than once.

6.4.4 Forward Traffic Channel

The mobile station shall check the CRC of all received Forward Traffic messages (see 7.7.3.2.2). The mobile station shall consider any message with a CRC that checks to be valid. The mobile station shall ignore any message which is not valid.

When in the *Mobile Station Control on the Traffic Channel State*, the mobile station shall continuously monitor the Forward Fundamental Code Channel, except:

- During a PUF probe in which it transmits on a PUF target frequency (see 6.6.4.1.7),
- During a search of pilots on a CDMA Candidate Frequency (see 6.6.6.2.8.3),
- During a search of analog frequencies (see 6.6.6.2.10).

If the mobile station receives N_{2m} consecutive bad frames on the Forward Fundamental Code Channel (see 6.2.2.2), it shall disable its transmitter. Thereafter, if the mobile station receives N_{3m} consecutive good frames on the Forward Fundamental Code Channel, the mobile station should re-enable its transmitter.

The mobile station shall establish a Forward Traffic Channel fade timer. The timer shall be enabled when the mobile station first enables its transmitter when in the *Traffic Channel Initialization Substate* of the *Mobile Station Control on the Traffic Channel State*. The fade timer shall be reset for T_{5m} seconds whenever N_{3m} consecutive good frames are received on the Forward Fundamental Code Channel. The mobile station shall disable the fade timer when it tunes to a PUF target frequency, and shall re-enable the fade timer at the end of the PUF probe. If the timer expires, the mobile station shall disable its transmitter and declare a loss of the Forward Traffic Channel.

The mobile station also enables, disables, and resets the fade timer when it performs a hard handoff or a periodic search, as described in 6.6.6.2.8 and 6.6.6.2.10.

6.4.5 Accumulated Statistics

6.4.5.1 Accumulated Access Channel Statistics

The mobile station shall maintain the counters shown in Table 6.4.5.1-1. Each counter shall be 16 bits long. The mobile station shall initialize each counter described herein to zero upon power-on; the mobile station shall not re-initialize any counter described herein at any other time except upon command from the base station. Each counter shall be maintained modulo 2^{16} .

The mobile station shall increment the ACC_1 counter for each Access Channel request message it generates. The mobile station shall increment the ACC_2 counter for each Access Channel response messages it generates. The mobile station shall increment the ACC_i counter during the i minus one transmission of an access probe in the access attempt, for i equals three to seven. The mobile station shall increment ACC_8 if the access attempt is unsuccessful due to the transmission of MAX_REQ_SEQ or MAX_RSP_SEQ probe sequences.

Table 6.4.5.1-1. Accumulated Access Channel Statistics

| Counter Identifier | Length (bits) | Description |
|--------------------|---------------|---|
| ACC_1 | 16 | Number of Access Channel request messages generated by layer 3 |
| ACC_2 | 16 | Number of Access Channel response messages generated by layer 3 |
| ACC_3 | 16 | Number of times that an access probe was transmitted at least twice |
| ACC_4 | 16 | Number of times that an access probe was transmitted at least three times |
| ACC_5 | 16 | Number of times that an access probe was transmitted at least four times |
| ACC_6 | 16 | Number of times that an access probe was transmitted at least five times |
| ACC_7 | 16 | Number of times that an access probe was transmitted at least six times |
| ACC_8 | 16 | Number of unsuccessful access attempts |

6.4.5.2 Accumulated Reverse Traffic Channel Statistics

The mobile station shall maintain the counters shown in Table 6.4.5.2-1 when supporting Multiplex Option 1 and in Table 6.4.5.2-2 when supporting Multiplex Option 2.

Each time the mobile station transmits a frame on the Reverse Fundamental Code Channel using the Multiplex Option 1, 3, 5, 7, 9, 11, 13 or 15, the mobile station shall increment the counter in Table 6.4.5.2-1 which corresponds to the type of frame. Similarly, each time the mobile station transmits a frame on the Reverse Fundamental Code Channel using Multiplex Option 2, 4, 6, 8, 10, 12, 14, or 16, the mobile station shall increment the counter in Table 6.4.5.2-2 which corresponds to the type of frame.

If the mobile station supports reverse Multiplex Options 3 through 16, the mobile station shall maintain the counters shown in Tables 6.4.5.2-3 in addition to counters shown in Table 6.4.5.2-1 and Table 6.4.5.2-2. Each time a frame is transmitted on one of the Reverse Supplemental Code Channels, the mobile station shall increment the counter given in Table 6.4.5.2-3 which corresponds to the number of the Supplemental Code Channel and frame type transmitted.

Each counter shall be 24 bits long. The mobile station shall initialize each counter described herein to zero upon power-on; the mobile station shall not re-initialize any counter described herein at any other time except upon command from the base station. Each counter shall be maintained modulo 2^{24} .

Each time a Multiplex Option 1 Reverse Traffic Channel frame or Multiplex Option 2 Reverse Traffic Channel frame is transmitted, the mobile station shall increment the counter corresponding to the multiplex option and the type of frame.

Table 6.4.5.2-1. Accumulated Reverse Fundamental Code Channel Statistics for Multiplex Options 1, 3, 5, 7, 9, 11, 13, and 15

| Counter Identifier | Length (bits) | Type of Frame |
|--------------------|---------------|---|
| MUX1_REV_1 | 24 | 9600 bps frame, primary traffic only or null Traffic Channel data only |
| MUX1_REV_2 | 24 | 9600 bps frame, dim-and-burst with Rate 1/2 primary and signaling traffic |
| MUX1_REV_3 | 24 | 9600 bps frame, dim-and-burst with Rate 1/4 primary and signaling traffic |
| MUX1_REV_4 | 24 | 9600 bps frame, dim-and-burst with Rate 1/8 primary and signaling traffic |
| MUX1_REV_5 | 24 | 9600 bps frame, blank-and-burst with signaling traffic only |
| MUX1_REV_6 | 24 | 4800 bps frame, primary traffic or null Traffic Channel data only |
| MUX1_REV_7 | 24 | 2400 bps frame, primary traffic or null Traffic Channel data only |
| MUX1_REV_8 | 24 | 1200 bps frame, primary traffic or null Traffic Channel data only |
| MUX1_REV_9 | 0 | Reserved |
| MUX1_REV_10 | 0 | Reserved |
| MUX1_REV_11 | 24 | 9600 bps frame, dim-and-burst with Rate 1/2 primary and secondary traffic |
| MUX1_REV_12 | 24 | 9600 bps frame, dim-and-burst with Rate 1/4 primary and secondary traffic |
| MUX1_REV_13 | 24 | 9600 bps frame, dim-and-burst with Rate 1/8 primary and secondary traffic |
| MUX1_REV_14 | 24 | 9600 bps frame, blank-and-burst with secondary traffic only |

Table 6.4.5.2-2. Accumulated Reverse Fundamental Code Channel Statistics for Multiplex Options 2, 4, 6, 8, 10, 12, 14, and 16 (Part 1 of 2)

| Counter Identifier | Length (bits) | Type of Frame |
|--------------------|---------------|--|
| MUX2_REV_1 | 24 | 14400 bps frame, primary traffic only or null Traffic Channel data only |
| MUX2_REV_2 | 24 | 14400 bps frame, dim-and-burst with Rate 1/2 primary and signaling traffic |
| MUX2_REV_3 | 24 | 14400 bps frame, dim-and-burst with Rate 1/4 primary and signaling traffic |
| MUX2_REV_4 | 24 | 14400 bps frame, dim-and-burst with Rate 1/8 primary and signaling traffic |
| MUX2_REV_5 | 24 | 14400 bps frame, blank-and-burst with signaling traffic only |
| MUX2_REV_6 | 24 | 14400 bps frame, dim-and-burst with Rate 1/2 primary and secondary traffic |
| MUX2_REV_7 | 24 | 14400 bps frame, dim-and-burst with Rate 1/4 primary and secondary traffic |
| MUX2_REV_8 | 24 | 14400 bps frame, dim-and-burst with Rate 1/8 primary and secondary traffic |
| MUX2_REV_9 | 24 | 14400 bps frame, blank-and-burst with secondary traffic only |
| MUX2_REV_10 | 24 | 14400 bps frame, dim-and-burst with Rate 1/8 primary, secondary traffic, and signaling traffic |
| MUX2_REV_11 | 24 | 7200 bps frame, primary traffic only or null Traffic Channel data only |
| MUX2_REV_12 | 24 | 7200 bps frame, dim-and-burst with Rate 1/4 primary and signaling traffic |
| MUX2_REV_13 | 24 | 7200 bps frame, dim-and-burst with Rate 1/8 primary and signaling traffic |
| MUX2_REV_14 | 24 | 7200 bps frame, blank-and-burst with signaling traffic only |
| MUX2_REV_15 | 24 | 7200 bps frame, dim-and-burst with Rate 1/4 primary and secondary traffic |
| MUX2_REV_16 | 24 | 7200 bps frame, dim-and-burst with Rate 1/8 primary and secondary traffic |

**Table 6.4.5.2-2. Accumulated Reverse Fundamental Code Channel Statistics for
Multiplex Options 2, 4, 6, 8, 10, 12, 14, and 16 (Part 2 of 2)**

| Counter Identifier | Length (bits) | Type of Frame |
|--------------------|---------------|---|
| MUX2_REV_17 | 24 | 7200 bps frame, blank-and-burst with secondary traffic only |
| MUX2_REV_18 | 24 | 7200 bps frame, dim-and-burst with Rate 1/8 primary, secondary traffic, and signaling traffic |
| MUX2_REV_19 | 24 | 3600 bps frame, primary traffic only or null Traffic Channel data only |
| MUX2_REV_20 | 24 | 3600 bps frame, dim-and-burst with Rate 1/8 primary and signaling traffic |
| MUX2_REV_21 | 24 | 3600 bps frame, blank-and-burst with signaling traffic only |
| MUX2_REV_22 | 24 | 3600 bps frame, dim-and-burst with Rate 1/8 primary and secondary traffic |
| MUX2_REV_23 | 24 | 3600 bps frame, blank-and-burst with secondary traffic only |
| MUX2_REV_24 | 24 | 1800 bps frame, primary traffic only or null Traffic Channel data only |
| MUX2_REV_25 | 24 | 1800 bps frame, blank-and-burst with secondary traffic only |
| MUX2_REV_26 | 0 | Reserved |

Table 6.4.5.2-3. Accumulated Reverse Supplemental Code Channel Statistics for Reverse Multiplex Options 3 through 16

| Counter Identifier | Length (bits) | Type of Frame |
|--------------------|---------------|--|
| SUPP1_REV_P | 24 | 9600 bps or 14400 bps frame, primary traffic only |
| SUPP1_REV_S | 24 | 9600 bps or 14400 bps frame, blank-and-burst with secondary traffic only |
| SUPP2_REV_P | 24 | 9600 bps or 14400 bps frame, primary traffic only |
| SUPP2_REV_S | 24 | 9600 bps or 14400 bps frame, blank-and-burst with secondary traffic only |
| SUPP3_REV_P | 24 | 9600 bps or 14400 bps frame, primary traffic only |
| SUPP3_REV_S | 24 | 9600 bps or 14400 bps frame, blank-and-burst with secondary traffic only |
| SUPP4_REV_P | 24 | 9600 bps or 14400 bps frame, primary traffic only |
| SUPP4_REV_S | 24 | 9600 bps or 14400 bps frame, blank-and-burst with secondary traffic only |
| SUPP5_REV_P | 24 | 9600 bps or 14400 bps frame, primary traffic only |
| SUPP5_REV_S | 24 | 9600 bps or 14400 bps frame, blank-and-burst with secondary traffic only |
| SUPP6_REV_P | 24 | 9600 bps or 14400 bps frame, primary traffic only |
| SUPP6_REV_S | 24 | 9600 bps or 14400 bps frame, blank-and-burst with secondary traffic only |
| SUPP7_REV_P | 24 | 9600 bps or 14400 bps frame, primary traffic only |
| SUPP7_REV_S | 24 | 9600 bps or 14400 bps frame, blank-and-burst with secondary traffic only |

6.4.5.3 Accumulated Paging Channel Statistics

The mobile station shall maintain the counters shown in Table 6.4.5.3-1. The counters shall have the length as specified in Table 6.4.5.3-1. The mobile station shall initialize each counter described herein to zero upon power-on; the mobile station shall not re-initialize any counter described herein at any other time except upon command from the base station. Each counter shall be maintained modulo 2^{Length} , where Length is specified in Table 6.4.5.3-1.

The mobile station shall increment the counter PAG_1 for each Paging Channel message CRC that it tests. The mobile station shall increment the counter PAG_2 for each invalid Paging Channel message. The mobile station shall increment the counter PAG_3¹⁶ for each record or message that it receives addressed to the mobile station. The PAG_3 counter shall not be incremented for messages detected as duplicates or for acknowledgments. The mobile station shall increment the counter PAG_4 for each Paging Channel half frame (see 7.7.2.1.2) that it receives. The mobile station shall increment the counter PAG_5 for each Paging Channel half frame that contains any part of a valid message. The mobile station shall increment the counter PAG_6 each time that it declares a loss of the Paging Channel (see 6.4.3). The mobile station shall increment the counter PAG_7 for each idle handoff it performs.

Table 6.4.5.3-1. Accumulated Paging Channel Statistics

| Counter Identifier | Length (bits) | Description |
|--------------------|---------------|--|
| PAG_1 | 24 | Number of Paging Channel messages the mobile station attempted to receive |
| PAG_2 | 24 | Number of Paging Channel messages the mobile station received with a CRC that does not check |
| PAG_3 | 16 | Number of Paging Channel messages or records the mobile station received that were addressed to it |
| PAG_4 | 24 | Number of Paging Channel half frames received by the mobile station |
| PAG_5 | 24 | Number of Paging Channel half frames that contain any part of a message with a CRC that checks |
| PAG_6 | 16 | Number of times that the mobile station declared a loss of the Paging Channel |
| PAG_7 | 16 | Number of mobile station idle handoffs |

¹⁶ PAG_3 counts those messages processed by layer 3.

1 6.4.5.4 Accumulated Forward Traffic Channel Statistics

2 The mobile station shall maintain the counters shown in Table 6.4.5.4-1 when supporting
3 Multiplex Option 1 and in Table 6.4.5.4-2 when supporting Multiplex Option 2.

4 Each time a mobile station categorizes a Multiplex Option 1, 3, 5, 7, 9, 11, or 15 Forward
5 Traffic Channel frame which is received on the Fundamental Code Channel (see 6.2.2.2),
6 the mobile station shall increment the counter shown in Table 6.4.5.4-1 which corresponds
7 to the type of frame. Similarly, each time a mobile station categorizes a Multiplex Option 2,
8 4, 6, 8, 10, 12, 14 or 16 Forward Traffic Channel frame which is received on the
9 Fundamental Code Channel (see 6.2.2.2), the mobile station shall increment the counter
10 shown in Table 6.4.5.4-2 which corresponds to the type of frame.

11 If the mobile station supports forward Multiplex Options 3 through 16, the mobile station
12 shall maintain the counters shown in Tables 6.4.5.4-3 in addition to counters shown in
13 Table 6.4.5.4-1 and Table 6.4.5.4-2. Each time a frame is received on one of the Forward
14 Supplemental Code Channels, the mobile station shall increment the counter given in Table
15 6.4.5.4-3 which corresponds to the number of the Supplemental Code Channel and frame
16 type received.

17 Each counter shall be 24 bits long. The mobile station shall initialize each counter
18 described herein to zero upon power-on; the mobile station shall not re-initialize any
19 counter described herein at any other time except upon command from the base station.
20 Each counter shall be maintained modulo 2^{24} .

21 The accumulation shall stop when the mobile station exits the *Mobile Station Control on the*
22 *Traffic Channel State*.

23

Table 6.4.5.4-1. Accumulated Forward Fundamental Code Channel Statistics for Multiplex Options 1, 3, 5, 7, 9, 11,13, and 15

| Counter Identifier | Length (bits) | Type of Frame |
|--------------------|---------------|---|
| MUX1_FOR_1 | 24 | 9600 bps frame, primary traffic only or null Traffic Channel data only |
| MUX1_FOR_2 | 24 | 9600 bps frame, dim-and-burst with Rate 1/2 primary and signaling traffic |
| MUX1_FOR_3 | 24 | 9600 bps frame, dim-and-burst with Rate 1/4 primary and signaling traffic |
| MUX1_FOR_4 | 24 | 9600 bps frame, dim-and-burst with Rate 1/8 primary and signaling traffic |
| MUX1_FOR_5 | 24 | 9600 bps frame, blank-and-burst with signaling traffic only |
| MUX1_FOR_6 | 24 | 4800 bps frame, primary traffic or null Traffic Channel data only |
| MUX1_FOR_7 | 24 | 2400 bps frame, primary traffic or null Traffic Channel data only |
| MUX1_FOR_8 | 24 | 1200 bps frame, primary traffic or null Traffic Channel data only |
| MUX1_FOR_9 | 24 | 9600 bps frame with bit errors |
| MUX1_FOR_10 | 24 | Frame quality insufficient to decide upon rate |
| MUX1_FOR_11 | 24 | 9600 bps frame, dim-and-burst with Rate 1/2 primary and secondary traffic |
| MUX1_FOR_12 | 24 | 9600 bps frame, dim-and-burst with Rate 1/4 primary and secondary traffic |
| MUX1_FOR_13 | 24 | 9600 bps frame, dim-and-burst with Rate 1/8 primary and secondary traffic |
| MUX1_FOR_14 | 24 | 9600 bps frame, blank-and-burst with secondary traffic only |

Table 6.4.5.4-2. Accumulated Forward Fundamental Code Channel Statistics for Multiplex Options 2, 4, 6, 8, 10, 12, 14, and 16 (Part 1 of 2)

| Counter Identifier | Length (bits) | Type of Frame |
|--------------------|---------------|--|
| MUX2_FOR_1 | 24 | 14400 bps frame, primary traffic only or null Traffic Channel data only |
| MUX2_FOR_2 | 24 | 14400 bps frame, dim-and-burst with Rate 1/2 primary and signaling traffic |
| MUX2_FOR_3 | 24 | 14400 bps frame, dim-and-burst with Rate 1/4 primary and signaling traffic |
| MUX2_FOR_4 | 24 | 14400 bps frame, dim-and-burst with Rate 1/8 primary and signaling traffic |
| MUX2_FOR_5 | 24 | 14400 bps frame, blank-and-burst with signaling traffic only |
| MUX2_FOR_6 | 24 | 14400 bps frame, dim-and-burst with Rate 1/2 primary and secondary traffic |
| MUX2_FOR_7 | 24 | 14400 bps frame, dim-and-burst with Rate 1/4 primary and secondary traffic |
| MUX2_FOR_8 | 24 | 14400 bps frame, dim-and-burst with Rate 1/8 primary and secondary traffic |
| MUX2_FOR_9 | 24 | 14400 bps frame, blank-and-burst with secondary traffic only |
| MUX2_FOR_10 | 24 | 14400 bps frame, dim-and-burst with Rate 1/8 primary, secondary traffic, and signaling traffic |
| MUX2_FOR_11 | 24 | 7200 bps frame, primary traffic only or null Traffic Channel data only |
| MUX2_FOR_12 | 24 | 7200 bps frame, dim-and-burst with Rate 1/4 primary and signaling traffic |
| MUX2_FOR_13 | 24 | 7200 bps frame, dim-and-burst with Rate 1/8 primary and signaling traffic |
| MUX2_FOR_14 | 24 | 7200 bps frame, blank-and-burst with signaling traffic only |
| MUX2_FOR_15 | 24 | 7200 bps frame, dim-and-burst with Rate 1/4 primary and secondary traffic |

Table 6.4.5.4-2. Accumulated Forward Fundamental Code Channel Statistics for Multiplex Options 2, 4, 6, 8, 10, 12, 14, and 16 (Part 2 of 2)

| Counter Identifier | Length (bits) | Type of Frame |
|--------------------|---------------|---|
| MUX2_FOR_16 | 24 | 7200 bps frame, dim-and-burst with Rate 1/8 primary and secondary traffic |
| MUX2_FOR_17 | 24 | 7200 bps frame, blank-and-burst with secondary traffic only |
| MUX2_FOR_18 | 24 | 7200 bps frame, dim-and-burst with Rate 1/8 primary, secondary traffic, and signaling traffic |
| MUX2_FOR_19 | 24 | 3600 bps frame, primary traffic only or null Traffic Channel data only |
| MUX2_FOR_20 | 24 | 3600 bps frame, dim-and-burst with Rate 1/8 primary and signaling traffic |
| MUX2_FOR_21 | 24 | 3600 bps frame, blank-and-burst with signaling traffic only |
| MUX2_FOR_22 | 24 | 3600 bps frame, dim-and-burst with Rate 1/8 primary and secondary traffic |
| MUX2_FOR_23 | 24 | 3600 bps frame, blank-and-burst with secondary traffic only |
| MUX2_FOR_24 | 24 | 1800 bps frame, primary traffic only or null Traffic Channel data only |
| MUX2_FOR_25 | 24 | 1800 bps frame, blank-and-burst with secondary traffic only |
| MUX2_FOR_26 | 24 | Frame with insufficient frame quality |

Table 6.4.5.4-3. Accumulated Forward Supplemental Code Channel Statistics for Multiplex Options 3 through 16

| Counter Identifier | Length (bits) | Type of Frame |
|--------------------|---------------|--|
| SUPP1_FOR_P | 24 | 9600 bps or 14400 bps frame, primary traffic only |
| SUPP1_FOR_S | 24 | 9600 bps or 14400 bps frame, blank-and-burst with secondary traffic only |
| SUPP2_FOR_P | 24 | 9600 bps or 14400 bps frame, primary traffic only |
| SUPP2_FOR_S | 24 | 9600 bps or 14400 bps frame, blank-and-burst with secondary traffic only |
| SUPP3_FOR_P | 24 | 9600 bps or 14400 bps frame, primary traffic only |
| SUPP3_FOR_S | 24 | 9600 bps or 14400 bps frame, blank-and-burst with secondary traffic only |
| SUPP4_FOR_P | 24 | 9600 bps or 14400 bps frame, primary traffic only |
| SUPP4_FOR_S | 24 | 9600 bps or 14400 bps frame, blank-and-burst with secondary traffic only |
| SUPP5_FOR_P | 24 | 9600 bps or 14400 bps frame, primary traffic only |
| SUPP5_FOR_S | 24 | 9600 bps or 14400 bps frame, blank-and-burst with secondary traffic only |
| SUPP6_FOR_P | 24 | 9600 bps or 14400 bps frame, primary traffic only |
| SUPP6_FOR_S | 24 | 9600 bps or 14400 bps frame, blank-and-burst with secondary traffic only |
| SUPP7_FOR_P | 24 | 9600 bps or 14400 bps frame, primary traffic only |
| SUPP7_FOR_S | 24 | 9600 bps or 14400 bps frame, blank-and-burst with secondary traffic only |

6.4.5.5 Accumulated Layer Two Statistics

The mobile station shall maintain the counters shown in Table 6.4.5.5-1. Each counter shall be 16 bits long. The mobile station shall initialize each counter described herein to zero upon power-on; the mobile station shall not re-initialize any counter described herein at any other time except upon command from the base station. Each counter shall be maintained modulo 2^{16} .

When the mobile station transmits a Reverse Traffic Channel message requiring an acknowledgment for the i^{th} time, for i equals one to three it shall increment the counter LAYER2_RTC i .

The mobile station shall increment the counter LAYER2_RTC4 each time it aborts using the Traffic Channel because the timeout expired after the N_{1m} transmission of a message requiring an acknowledgment.

The mobile station shall increment the counter LAYER2_RTC5 for each transmission of a message not requiring an acknowledgment on the Reverse Traffic Channel. This count shall include all transmissions, including those that were repeated multiple times or those carrying an identical layer 3 content.

Table 6.4.5.5-1. Accumulated Layer 2 Statistics

| Counter Identifier | Length (bits) | Description |
|--------------------|---------------|--|
| LAYER2_RTC1 | 16 | Number of messages requiring acknowledgment that were transmitted at least once on the Reverse Traffic Channel |
| LAYER2_RTC2 | 16 | Number of messages requiring acknowledgment that were transmitted at least twice on the Reverse Traffic Channel |
| LAYER2_RTC3 | 16 | Number of messages requiring acknowledgment that were transmitted at least three times on the Reverse Traffic Channel |
| LAYER2_RTC4 | 16 | Number of times that the mobile station aborted a call as a result of the timeout expiring after the N_{1m} transmission of a message requiring acknowledgment |
| LAYER2_RTC5 | 16 | Number of times a message not requiring an acknowledgment was sent on the Reverse Traffic Channel |

6.4.5.6 Other Monitored Quantities and Statistics

The mobile station shall store the value described in Table 6.4.5.6-1.

Table 6.4.5.6-1. Other Monitored Quantities and Statistics

| Quantity Identifier | Length (bits) | Description |
|---------------------|---------------|--|
| OTHER_SYS_TIME | 36 | The SYS_TIME field from the most recently received <i>Sync Channel Message</i> |

6.5 Malfunction Detection

6.5.1 Malfunction Timer

The mobile station shall have a malfunction timer that is separate from and independent of all other functions and that runs continuously whenever power is applied to the transmitter of the mobile station. Sufficient reset commands shall be interspersed throughout the mobile station logic program to ensure that the timer never expires as long as the proper sequence of operations is taking place. If the timer expires, a malfunction shall be assumed and the mobile station shall be inhibited from transmitting. The maximum time allowed for expiration of the timer is T_{67m} seconds.

6.5.2 False Transmission

A protection circuit must be provided to minimize the possibility of false transmitter operation caused by component failure within the mobile station.

6.5.3 Response to Base Station Orders

To ensure that a mobile station transmits a spread spectrum signal which does not adversely affect system capacity, the mobile station shall respond to the *Lock Until Power-Cycled Order* and *Maintenance Required Order* from the base station as specified in 6.6.2.4, 6.6.3.2 through 6.6.3.7, and 6.6.4.3 through 6.6.4.5. It is the responsibility of the base station to detect a mobile station transmission malfunction and to send the appropriate message.

1 No text.

2

6.6 Call Processing

This section describes mobile station call processing. It contains frequent references to the messages that flow between the mobile station and base station. While reading this section, it may be helpful to refer to the message formats (see 6.7 and 7.7), and to the message flow examples (see Annex B).

The mobile station shall ignore fields at the end of messages which do not exist in the protocol revision supported by the mobile station.

The values for the time and numerical constants used in this section (e.g., T_{20m} , N_{4m}) are specified in Annex D.

As illustrated in Figure 6.6-1, mobile station call processing consists of the following states:

- *Mobile Station Initialization State* - In this state, the mobile station selects and acquires a system.
- *Mobile Station Idle State* - In this state, the mobile station monitors messages on the Paging Channel.
- *System Access State* - In this state, the mobile station sends messages to the base station on the Access Channel.
- *Mobile Station Control on the Traffic Channel State* - In this state, the mobile station communicates with the base station using the Forward and Reverse Traffic Channels.

After power is applied to the mobile station, it shall enter the *System Determination Substate* of the *Mobile Station Initialization State* with a power-up indication (see 6.6.1.1).

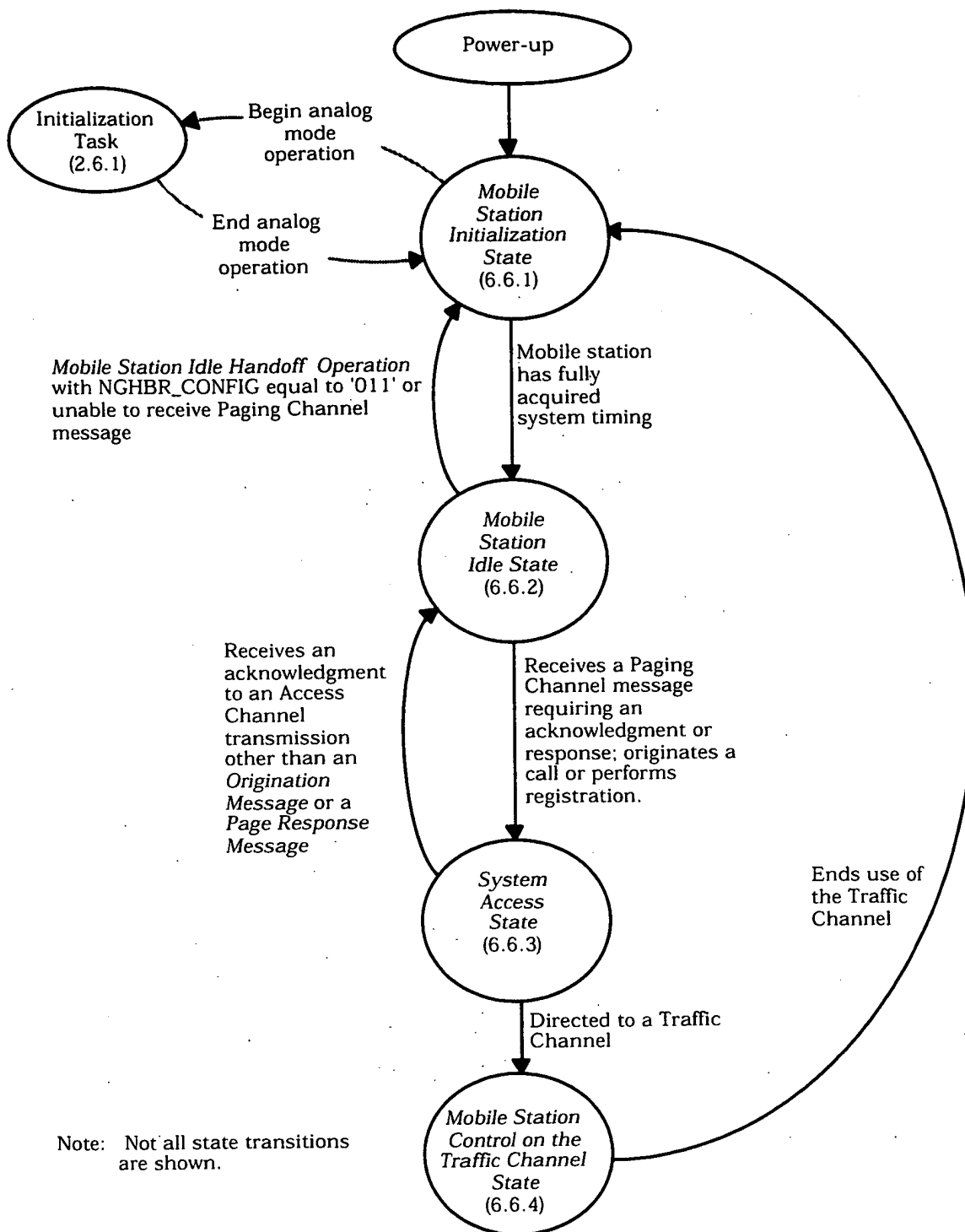


Figure 6.6-1. Mobile Station Call Processing States

6.6.1 Mobile Station Initialization State

In this state, the mobile station first selects a system to use. If the selected system is a CDMA system, the mobile station proceeds to acquire and then synchronize to the CDMA system. If the selected system is an analog system, the mobile station begins analog mode operation (see 2.6.1).

As illustrated in Figure 6.6.1-1, the *Mobile Station Initialization State* consists of the following substates:

- *System Determination Substate* - In this substate, the mobile station selects which system to use.
- *Pilot Channel Acquisition Substate* - In this substate, the mobile station acquires the Pilot Channel of a CDMA system.
- *Sync Channel Acquisition Substate* - In this substate, the mobile station obtains system configuration and timing information for a CDMA system.
- *Timing Change Substate* - In this substate, the mobile station synchronizes its timing to that of a CDMA system.

While in the *Mobile Station Initialization State*, the mobile station shall update all active registration timers as specified in 6.6.5.5.1.2.

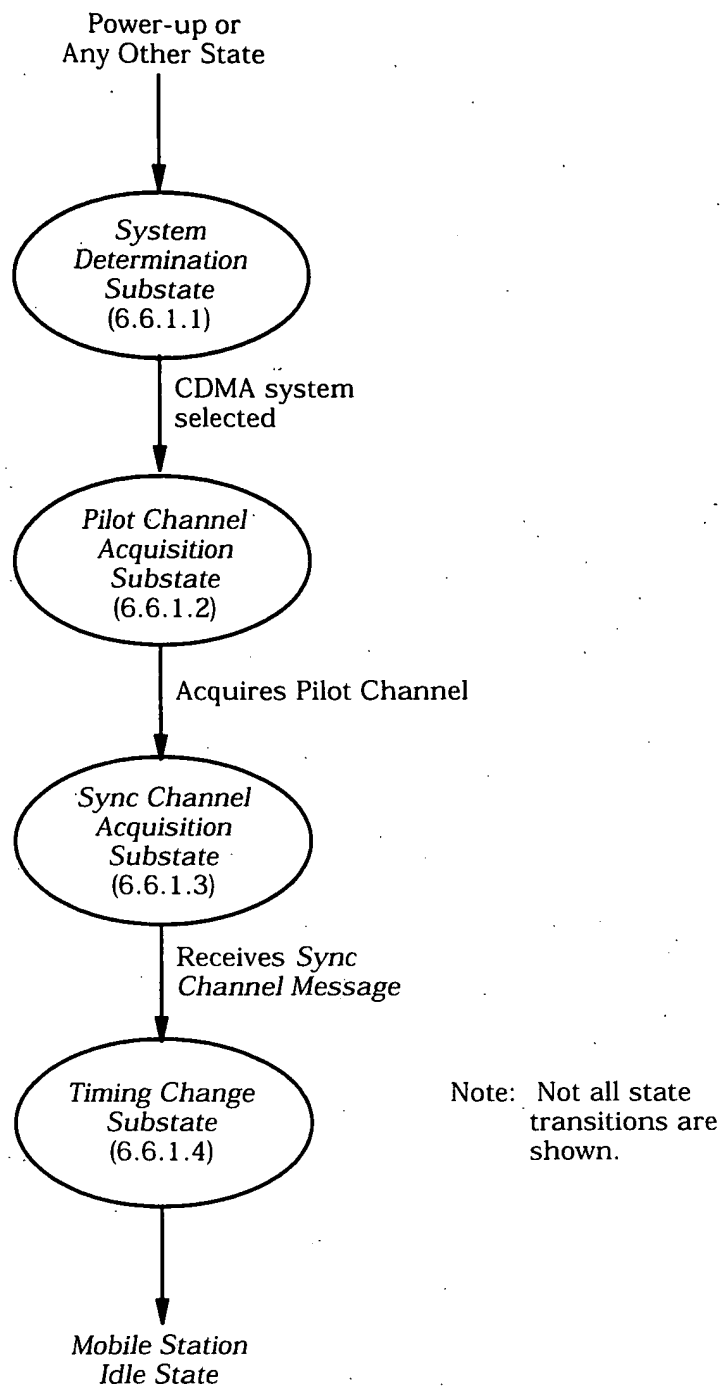


Figure 6.6.1-1. Mobile Station Initialization State

6.6.1.1 System Determination Substate

In this substate, the mobile station selects the system to use.

Upon entering the *System Determination Substate*, the mobile station shall initialize registration parameters as specified in 6.6.5.5.1.1.

If the mobile station enters the *System Determination Substate* with a power-up indication, the mobile station shall set $RAND_S$ to 0 (see 2.3.12.1.2), $PACA_S$ to disabled, $PACA_CANCEL$ to '0', the $PACA$ state timer to disabled, $NDSS_ORIG_S$ to disabled, $MAX_REDIRECT_DELAY_S$ to 31, and $REDIRECTION_S$ to disabled. If the mobile station supports analog mode operation in Band Class 0, the mobile station shall set the First-Idle ID status to enabled (see 2.6.3.11). The mobile station shall select a system in accordance with the custom system selection process (see 6.6.1.1.1), and shall attempt to acquire the selected system (see 6.6.1.1.4).

If the mobile station enters the *System Determination Substate* with any indication other than a power-up indication and $PACA_S$ is equal to enabled, the mobile station shall set $PACA_S$ to disabled, $PACA_CANCEL$ to '0', the $PACA$ state timer to disabled, and should indicate to the user that the $PACA$ call has been canceled.

If the mobile station enters the *System Determination Substate* with an acquisition failure indication, the mobile station shall perform the following:

- If $REDIRECTION_S$ is equal to enabled, the mobile station shall attempt to select another system in accordance with the current redirection criteria (see 6.6.1.1.2). If the mobile station is able to select another system, the mobile station shall attempt to acquire the selected system (see 6.6.1.1.4). Otherwise, if the mobile station has exhausted all possible selections using the current redirection criteria, the mobile station shall perform the following:
 - The mobile station shall set $REDIRECTION_S$ to disabled.
 - The mobile station shall set $RETURN_CAUSE_S$ to '0001'.
 - If $RETURN_IF_FAIL_S$ is equal to '1', the mobile station shall attempt to select the system from which it was redirected, and shall attempt to acquire the selected system (see 6.6.1.1.4). The precise process for determining how to select the system from which the mobile station was redirected is left to the mobile station manufacturer.
 - If $RETURN_IF_FAIL_S$ is equal to '0', the mobile station shall select a system other than the system from which it was redirected in accordance with the custom system selection process (see 6.6.1.1.1), and shall attempt to acquire the selected system (see 6.6.1.1.4). The precise process that the mobile station uses to avoid selecting the system from which it was redirected is left to the mobile station manufacturer.
- If $REDIRECTION_S$ is equal to disabled, the mobile station shall select a system in accordance with the custom system selection process (see 6.6.1.1.1), and shall attempt to acquire the selected system (see 6.6.1.1.4).

1 If the mobile station enters the *System Determination Substate* with a new system
 2 indication, the mobile station shall set REDIRECTION_S to disabled. If NDSS_ORIG_S is
 3 enabled, the mobile station shall set NDSS_ORIG_S to disabled and should indicate to the
 4 user that the call origination has been canceled. The mobile station shall select a system in
 5 accordance with the custom system selection process (see 6.6.1.1.1), and shall attempt to
 6 acquire the selected system (see 6.6.1.1.4).

7 If the mobile station enters the *System Determination Substate* with a CDMA available
 8 indication, the mobile station shall set REDIRECTION_S to disabled. If NDSS_ORIG_S is
 9 enabled, the mobile station shall set NDSS_ORIG_S to disabled and should indicate to the
 10 user that the call origination is canceled. The mobile station should set CDMACH_S to the
 11 CDMA Channel (CDMA_FREQ) specified in the *CDMA Capability Global Action Message* and
 12 should attempt to acquire a CDMA system on the specified CDMA channel (see 6.6.1.1.4).
 13 If the mobile station does not attempt to acquire a CDMA system on the specified CDMA
 14 Channel, the mobile station shall select a system in accordance with the custom system
 15 selection process (see 6.6.1.1.1), and shall attempt to acquire the selected system (see
 16 6.6.1.1.4).

17 If the mobile station enters the *System Determination Substate* with an additional CDMA
 18 available indication, the mobile station shall set REDIRECTION_S to disabled. If
 19 NDSS_ORIG_S is enabled, the mobile station shall set NDSS_ORIG_S to disabled and should
 20 indicate to the user that the call origination is canceled. The mobile station should set
 21 CDMACH_S to the CDMA Channel (CDMA_FREQ) specified in the *CDMA Info Order* and
 22 should attempt to acquire a CDMA system on the specified CDMA channel (see 6.6.1.1.4).
 23 If the mobile station does not attempt to acquire a CDMA system on the specified CDMA
 24 Channel, the mobile station shall select a system in accordance with the custom system
 25 selection process (see 6.6.1.1.1), and shall attempt to acquire the selected system (see
 26 6.6.1.1.4).

27 If the mobile station enters the *System Determination Substate* with a reselection indication,
 28 the mobile station shall set REDIRECTION_S to disabled. If NDSS_ORIG_S is enabled, the
 29 mobile station shall set NDSS_ORIG_S to disabled and should indicate to the user that the
 30 call origination is canceled. The mobile station shall select a system in accordance with the
 31 custom system selection process (see 6.6.1.1.1), and shall attempt to acquire the selected
 32 system (see 6.6.1.1.4).

33 If the mobile station enters the *System Determination Substate* with a system reselection
 34 indication, the mobile station shall set REDIRECTION_S to disabled. If NDSS_ORIG_S is
 35 enabled, the mobile station shall set NDSS_ORIG_S to disabled and should indicate to the
 36 user that the call origination is canceled. The mobile station should attempt to select a
 37 system available for system reselection as specified in 6.6.1.1.3, and should attempt to
 38 acquire the selected system (see 6.6.1.1.4). The precise process for determining how to
 39 select such a system is left to the mobile station manufacturer. If the mobile station does
 40 not attempt to select such a system, the mobile station shall select a system in accordance
 41 with the custom system selection process (see 6.6.1.1.1), and shall attempt to acquire the
 42 selected system (see 6.6.1.1.4).

43 If the mobile station enters the *System Determination Substate* with a rescan indication, the
 44 mobile station shall set REDIRECTION_S to disabled. If NDSS_ORIG_S is enabled, the mobile

station shall set NDSS_ORIG_s to disabled and should indicate to the user that the call origination is canceled. The mobile station shall select a system in accordance with the custom system selection process (see 6.6.1.1.1), and shall attempt to acquire the selected system (see 6.6.1.1.4).

If the mobile station enters the *System Determination Substate* with a protocol mismatch indication, the mobile station shall perform the following:

- If REDIRECTION_s is equal to enabled, the mobile station shall attempt to select another system in accordance with the current redirection criteria (see 6.6.1.1.2). If the mobile station is able to select another system, the mobile station shall attempt to acquire the selected system (see 6.6.1.1.4). Otherwise, if the mobile station has exhausted all possible selections using the current redirection criteria, the mobile station shall perform the following:
 - The mobile station shall set REDIRECTION_s to disabled.
 - The mobile station shall set RETURN_CAUSE_s to '0010'.
 - If RETURN_IF_FAIL_s is equal to '1', the mobile station shall attempt to select the system from which it was redirected, and shall attempt to acquire the selected system (see 6.6.1.1.4). The precise process for determining how to select the system from which the mobile station was redirected is left to the mobile station manufacturer.
 - If RETURN_IF_FAIL_s is equal to '0', the mobile station shall select a system other than the system from which it was redirected in accordance with the custom system selection process (see 6.6.1.1.1), and shall attempt to acquire the selected system (see 6.6.1.1.4). The precise process for determining how to avoid the system from which the mobile station was redirected is left to the mobile station manufacturer.
- If REDIRECTION_s is equal to disabled, the mobile station shall select a system in accordance with the custom system selection process (see 6.6.1.1.1), and shall attempt to acquire the selected system (see 6.6.1.1.4).

If the mobile station enters the *System Determination Substate* with a system lost indication, the mobile station shall set REDIRECTION_s to disabled. If NDSS_ORIG_s is enabled, the mobile station shall set NDSS_ORIG_s to disabled and should indicate to the user that the call origination is canceled. The mobile station should attempt to select the same system that was lost, and should attempt to acquire the selected system (see 6.6.1.1.4). The precise process for determining how to select the same system is left to the mobile station manufacturer. If the mobile station does not attempt to select the same system, the mobile station shall select a system in accordance with the custom system selection process (see 6.6.1.1.1), and shall attempt to acquire the selected system (see 6.6.1.1.4).

If the mobile station enters the *System Determination Substate* with a lock indication, the mobile station shall set REDIRECTION_s to disabled. If NDSS_ORIG_s is enabled, the mobile station shall set NDSS_ORIG_s to disabled and should indicate to the user that the call origination is canceled. The mobile station shall select a system in accordance with the

1 custom system selection process (see 6.6.1.1.1), and shall attempt to acquire the selected
2 system (see 6.6.1.1.4).

3 If the mobile station enters the *System Determination Substate* with an unlock indication,
4 the mobile station shall set REDIRECTION_S to disabled. If NDSS_ORIG_S is enabled, the
5 mobile station shall set NDSS_ORIG_S to disabled and should indicate to the user that the
6 call origination is canceled. The mobile station shall select a system in accordance with the
7 custom system selection process (see 6.6.1.1.1), and shall attempt to acquire the selected
8 system (see 6.6.1.1.4).

9 If the mobile station enters the *System Determination Substate* with an access denied
10 indication, the mobile station shall set REDIRECTION_S to disabled. If NDSS_ORIG_S is
11 enabled, the mobile station shall set NDSS_ORIG_S to disabled and should indicate to the
12 user that the call origination is canceled. The mobile station shall select a system in
13 accordance with the custom system selection process (see 6.6.1.1.1), and shall attempt to
14 acquire the selected system (see 6.6.1.1.4).

15 If the mobile station enters the *System Determination Substate* with an NDSS off indication,
16 the mobile station shall set REDIRECTION_S to disabled. If NDSS_ORIG_S is enabled, the
17 mobile station shall set NDSS_ORIG_S to disabled and should indicate to the user that the
18 call origination is canceled. The mobile station shall select a system in accordance with the
19 custom system selection process (see 6.6.1.1.1), and shall attempt to acquire the selected
20 system (see 6.6.1.1.4).

21 If the mobile station enters the *System Determination Substate* with a release indication and
22 REDIRECTION_S is equal to enabled, the mobile station shall attempt to select the same
23 system on which the release occurred, and shall attempt to acquire the selected system (see
24 6.6.1.1.4). The precise process for determining how to select the same system is left to the
25 mobile station manufacturer. If REDIRECTION_S is equal to disabled, the mobile station
26 shall select a system in accordance with the custom system selection process (see
27 6.6.1.1.1), and shall attempt to acquire the selected system (see 6.6.1.1.4). If NDSS_ORIG_S
28 is enabled, the mobile station shall set NDSS_ORIG_S to disabled.

29 If the mobile station enters the *System Determination Substate* with an error indication, the
30 mobile station shall set REDIRECTION_S to disabled. If NDSS_ORIG_S is enabled, the mobile
31 station shall set NDSS_ORIG_S to disabled and should indicate to the user that the call
32 origination is canceled. The mobile station shall select a system in accordance with the
33 custom system selection process (see 6.6.1.1.1), and shall attempt to acquire the selected
34 system (see 6.6.1.1.4).

35 If the mobile station enters the *System Determination Substate* with a redirection indication,
36 the mobile station shall set REDIRECTION_S to enabled. The mobile station shall delete all
37 entries from the ZONE_LIST_S and SID_NID_LIST_S. The mobile station shall select a system
38 in accordance with the current redirection criteria (see 6.6.1.1.2), and shall attempt to
39 acquire the selected system (see 6.6.1.1.4).

40 If the mobile station enters the *System Determination Substate* with a registration rejected
41 indication, the mobile station shall perform the following:

- 42 • If REDIRECTION_S is equal to enabled, the mobile station shall perform the following:

- 1 - The mobile station shall set REDIRECTION_S to disabled.
- 2 - The mobile station shall set RETURN_CAUSE_S to '0011'.
- 3 - If RETURN_IF_FAIL_S is equal to '1', the mobile station shall attempt to select the
- 4 system from which it was redirected, and shall attempt to acquire the selected
- 5 system (see 6.6.1.1.4). The precise process for determining how to select the
- 6 system from which the mobile station was redirected is left to the mobile station
- 7 manufacturer.
- 8 - If RETURN_IF_FAIL_S is equal to '0', the mobile station shall select a system other
- 9 than the system from which it was redirected in accordance with the custom
- 10 system selection process (see 6.6.1.1.1), and shall attempt to acquire the
- 11 selected system (see 6.6.1.1.4). The precise process for determining how to
- 12 avoid the system from which the mobile station was redirected is left to the
- 13 mobile station manufacturer.
- 14 • If REDIRECTION_S is equal to disabled, the mobile station shall select a system in
- 15 accordance with the custom system selection process (see 6.6.1.1.1), and shall
- 16 attempt to acquire the selected system (see 6.6.1.1.4).

17 If the mobile station enters the *System Determination Substate* with a wrong system
18 indication, the mobile station shall perform the following:

- 19 • If REDIRECTION_S is equal to enabled, the mobile station shall attempt to select
- 20 another system in accordance with the current redirection criteria (see 6.6.1.1.2). If
- 21 the mobile station is able to select another system, the mobile station shall attempt
- 22 to acquire the selected system (see 6.6.1.1.4). Otherwise, if the mobile station has
- 23 exhausted all possible selections using the current redirection criteria, the mobile
- 24 station shall perform the following:
 - 25 - The mobile station shall set REDIRECTION_S to disabled.
 - 26 - The mobile station shall set RETURN_CAUSE_S to '0100'.
 - 27 - If RETURN_IF_FAIL_S is equal to '1', the mobile station shall attempt to select the
 - 28 system from which it was redirected, and shall attempt to acquire the selected
 - 29 system (see 6.6.1.1.4). The precise process for determining how to select the
 - 30 system from which the mobile station was redirected is left to the mobile station
 - 31 manufacturer.
 - 32 - If RETURN_IF_FAIL_S is equal to '0', the mobile station shall select a system other
 - 33 than the system from which it was redirected in accordance with the custom
 - 34 system selection process (see 6.6.1.1.1), and shall attempt to acquire the
 - 35 selected system (see 6.6.1.1.4). The precise process for determining how to
 - 36 avoid the system from which the mobile station was redirected is left to the
 - 37 mobile station manufacturer.
- 38 • If REDIRECTION_S is equal to disabled, the mobile station shall select a system in
- 39 accordance with the custom system selection process (see 6.6.1.1.1), and shall
- 40 attempt to acquire the selected system (see 6.6.1.1.4).

1 If the mobile station enters the *System Determination Substate* with a wrong network
2 indication, the mobile station shall perform the following:

- 3 • If REDIRECTION_S is equal to enabled, the mobile station shall attempt to select
4 another system in accordance with the current redirection criteria (see 6.6.1.1.2). If
5 the mobile station is able to select another system, the mobile station shall attempt
6 to acquire the selected system (see 6.6.1.1.4). Otherwise, if the mobile station has
7 exhausted all possible selections using the current redirection criteria, the mobile
8 station shall perform the following:
 - 9 – The mobile station shall set REDIRECTION_S to disabled.
 - 10 – The mobile station shall set RETURN_CAUSE_S to '0101'.
 - 11 – If RETURN_IF_FAIL_S is equal to '1', the mobile station shall attempt to select the
12 system from which it was redirected, and shall attempt to acquire the selected
13 system (see 6.6.1.1.4). The precise process for determining how to select the
14 system from which the mobile station was redirected is left to the mobile station
15 manufacturer.
 - 16 – If RETURN_IF_FAIL_S is equal to '0', the mobile station shall select a system other
17 than the system from which it was redirected in accordance with the custom
18 system selection process (see 6.6.1.1.1), and shall attempt to acquire the
19 selected system (see 6.6.1.1.4). The precise process for determining how to
20 avoid the system from which the mobile station was redirected is left to the
21 mobile station manufacturer.
- 22 • If REDIRECTION_S is equal to disabled, the mobile station shall select a system in
23 accordance with the custom system selection process (see 6.6.1.1.1), and shall
24 attempt to acquire the selected system (see 6.6.1.1.4).

25 6.6.1.1.1 Custom System Selection Process

26 The precise process for custom system selection is left to the mobile station manufacturer.
27 It is typically influenced by a set of expressed user preferences, such as the following:

- 28 • System A (or B) only (Band Class 0 only)
- 29 • System A (or B) preferred (Band Class 0 only)
- 30 • CDMA (or analog) system only
- 31 • CDMA (or analog) system preferred
- 32 • 800 MHz (or 1.8 GHz) band only (CDMA system)
- 33 • 800 MHz (or 1.8 GHz) band preferred (CDMA system)

34 The mobile station shall perform the custom system selection process as follows:

- 35 • The mobile station shall determine which system to use.
- 36 • If the mobile station is to use a CDMA system, it shall set CDMABAND_S to the band
37 class (see TSB58-A) for the selected system.

- 1 • If the mobile station is to use a CDMA system with $\text{CDMABAND}_S = '00000'$, it shall
2 perform the following:
 - 3 - If the mobile station is to use System A, it shall set SERVSYS_S to SYS_A . If the
4 mobile station is to use System B, it shall set SERVSYS_S to SYS_B .
 - 5 - The mobile station shall set CDMACH_S either to the Primary or Secondary CDMA
6 Channel number (see 7.1.1.1) for the selected serving system (SERVSYS_S). If the
7 mobile station fails to acquire a CDMA system on the first CDMA Channel it
8 tries, the mobile station should attempt to acquire on the alternate CDMA
9 Channel (Primary or Secondary) before attempting other alternatives.
- 10 • If the mobile station is to use a CDMA system with $\text{CDMABAND}_S = '00001'$, it shall
11 set CDMACH_S to the CDMA Channel number (see 6.1.1.1.2) for the selected system.

12 If the mobile station is to use System A of the 800 MHz analog system, it shall set
13 SERVSYS_S to SYS_A . If the mobile station is to use System B of the 800 MHz analog
14 system, it shall set SERVSYS_S to SYS_B .

15 6.6.1.1.2 System Selection Using Current Redirection Criteria

16 To perform system selection using current redirection criteria, the mobile station shall use
17 information received either in a *Service Redirection Message* or a *Global Service Redirection*
18 *Message* and stored in the variable REDIRECT_REC_S .

19 If the RECORD_TYPE field of REDIRECT_REC_S is equal to '00000001' and the mobile
20 station supports Band Class 0, the mobile station shall perform system selection as follows:

- 21 • If the SYS_ORDERING field is equal to '000', the mobile station shall make
22 sequential system selections as follows:
 - 23 - The mobile station shall set SERVSYS_S either to SYS_A or SYS_B . The precise
24 process for determining how many system selections to make and for
25 determining whether to use SYS_A or SYS_B is left to the mobile station
26 manufacturer.
- 27 • If the SYS_ORDERING field is equal to '001', the mobile station shall select no more
28 than one system selection as follows:
 - 29 - The mobile station shall set SERVSYS_S to SYS_A .
- 30 • If the SYS_ORDERING field is equal to '010', the mobile station shall make at most
31 one system selection as follows:
 - 32 - The mobile station shall set SERVSYS_S to SYS_B .
- 33 • If the SYS_ORDERING field is equal to '011', the mobile station shall make at most
34 two sequential system selections as follows:
 - 35 - For the first system selection, the mobile station shall set SERVSYS_S to SYS_A .
 - 36 - For the second system selection, the mobile station shall set SERVSYS_S to
37 SYS_B .

- 1 • If the SYS_ORDERING field is equal to '100', the mobile station shall make at most 2
2 sequential system selections as follows:
 - 3 – For the first system selection, the mobile station shall set SERVSYS_s to SYS_B.
 - 4 – For the second system selection, the mobile station shall set SERVSYS_s to
5 SYS_A.
- 6 • If the SYS_ORDERING field is equal to '101', the mobile station shall make at most 2
7 sequential system selections as follows:
 - 8 – For the first system selection, the mobile station shall set SERVSYS_s either to
9 SYS_A or SYS_B. The precise process for determining whether to use SYS_A or
10 SYS_B first is left to the mobile station manufacturer.
 - 11 – For the second system selection, the mobile station shall set SERVSYS_s to
12 SYS_B if SYS_A was used for the first selection, or to SYS_A if SYS_B was used
13 for the first selection.

14 If the RECORD_TYPE field of REDIRECT_REC_s is equal to '00000010', the mobile station
15 shall perform system selection as follows:

- 16 • If the BAND_CLASS field is equal to '00000' and the mobile station supports CDMA
17 mode operation in Band Class 0, the mobile station shall make at most n sequential
18 system selections, where n is equal to the value of the NUM_CHANS field, as follows:
 - 19 – For the i^{th} system selection, where i ranges from 1 to n , the mobile station shall
20 set CDMACH_s to the value of the i^{th} occurrence of the CDMA_CHAN field and
21 shall set CDMABAND_s to 0.
- 22 • If the BAND_CLASS field is equal to '00001' and the mobile station supports CDMA
23 mode operation in Band Class 1, the mobile station shall make at most n sequential
24 system selections, where n is equal to the value of the NUM_CHANS field, as follows:
 - 25 – For the i^{th} system selection, where i ranges from 1 to n , the mobile station shall
26 set CDMACH_s to the value of the i^{th} occurrence of the CDMA_CHAN field and
27 shall set CDMABAND_s to 1.

28 6.6.1.1.3 System Selection Using System Reselection Criteria

29 The precise process for selecting a system using system reselection criteria is left to the
30 mobile station manufacturer. The mobile station should use information received in the
31 *Extended Neighbor List Message* or the *General Neighbor List Message* to perform the
32 system reselection process as follows:

- 33 • If there are pilots in the Neighbor List on a different frequency assignment than that
34 of the mobile station, the mobile station may select the CDMA system consisting of
35 these neighbor pilots. If the mobile station is to use a CDMA system, it shall set
36 CDMABAND_s to the band class (see TSB58-A) for the selected system and shall set
37 CDMACH_s to the CDMA Channel number (see 6.1.1.1.2) for the selected system.

- If NUM_ANALOG_NGHBR_s is not equal to '000', the mobile station may select an analog system as specified by ANALOG_NGHBR_LIST. If the mobile station is to use System A of the 800 MHz analog system, it shall set SERVSYS_s to SYS_A. If the mobile station is to use System B of the 800 MHz analog system, it shall set SERVSYS_s to SYS_B.

6.6.1.1.4 Acquiring the Selected System

The mobile station shall attempt to acquire the selected system as follows:

- If the selected system is an analog system, the mobile station shall enter the Initialization Task (see 2.6.1).
- If the selected system is a CDMA system, the mobile station shall enter the *Pilot Channel Acquisition Substate*.

6.6.1.2 Pilot Channel Acquisition Substate

In this substate, the mobile station acquires the Pilot Channel of the selected CDMA system.

Upon entering the *Pilot Channel Acquisition Substate*, the mobile station shall tune to the CDMA Channel number equal to CDMACH_s, shall set its code channel for the Pilot Channel (see 7.1.3.1.9), and shall search for the Pilot Channel for no longer than T_{20m} seconds (see Annex D). If the mobile station acquires the Pilot Channel, the mobile station shall enter the *Sync Channel Acquisition Substate*.

If the mobile station determines that it is unlikely to acquire the Pilot Channel within T_{20m} seconds, the mobile station may enter the *System Determination Substate* with an acquisition failure indication (see 6.6.1.1). The time, to either acquire the Pilot Channel or determine that Pilot Channel acquisition is unlikely, shall not exceed T_{20m} seconds (see Annex D), after which the mobile station shall enter the *System Determination Substate* with an acquisition failure indication (see 6.6.1.1).

6.6.1.3 Sync Channel Acquisition Substate

In this substate, the mobile station receives and processes the *Sync Channel Message* to obtain system configuration and timing information.

Upon entering the *Sync Channel Acquisition Substate*, the mobile station shall set its code channel for the Sync Channel (see 7.1.3.1.9).

If the mobile station does not receive a valid *Sync Channel Message* (see 6.4.2) within T_{21m} seconds, the mobile station shall enter the *System Determination Substate* with an acquisition failure indication.

If the mobile station receives a valid *Sync Channel Message* within T_{21m} seconds but the protocol revision level supported by mobile station (MOB_P_REV_p of the current band class) is less than the minimum protocol revision level supported by the base station (MIN_P_REV_p), the mobile station shall enter the *System Determination Substate* with a protocol mismatch indication (see 6.6.1.1).

1 If the mobile station receives a valid *Sync Channel Message* within T_{21m} seconds but the
 2 value of the $PRAT_r$ field is designated as reserved by the protocol revision level supported by
 3 the mobile station ($MOB_P_REV_p$ of the current band class), the mobile station shall enter
 4 the *System Determination Substate* with a protocol mismatch indication (see 6.6.1.1).

5 If the mobile station receives a valid *Sync Channel Message* within T_{21m} seconds and the
 6 protocol revision level supported by the mobile station ($MOB_P_REV_p$ of the current band
 7 class) is greater than or equal to the minimum protocol revision level supported by the base
 8 station ($MIN_P_REV_r$), the mobile station shall store the following information from the
 9 message:

- 10 • Protocol revision level ($P_REV_s = P_REV_r$)
- 11 • Minimum protocol revision level ($MIN_P_REV_s = MIN_P_REV_r$)
- 12 • System identification ($SID_s = SID_r$)
- 13 • Network identification ($NID_s = NID_r$)
- 14 • Pilot PN sequence offset index ($PILOT_PN_s = PILOT_PN_r$)
- 15 • Long code state ($LC_STATE_s = LC_STATE_r$)
- 16 • System Time ($SYS_TIME_s = SYS_TIME_r$)
- 17 • Paging Channel data rate ($PRAT_s = PRAT_r$)
- 18 • Protocol revision level currently in use ($P_REV_IN_USE_s$ = the lesser value of P_REV_s
 19 and $MOB_P_REV_p$ of the current band class)

20 The mobile station shall ignore any fields at the end of the *Sync Channel Message* which
 21 are not defined according to the protocol revision level ($MOB_P_REV_p$ of the current band
 22 class) being used by the mobile station.

23 The mobile station may store the following information from the message:

- 24 • Number of leap seconds that have occurred since the start of System Time
 25 ($LP_SEC_s = LP_SEC_r$)
- 26 • Offset of local time from System Time ($LTM_OFF_s = LTM_OFF_r$)
- 27 • Daylight savings time indicator ($DAYLT_s = DAYLT_r$)

28 If $REDIRECTION_s$ and $NDSS_ORIG_s$ are equal to disabled, the mobile station may enter the
 29 *System Determination Substate* with a reselection indication (see 6.6.1.1).

30 If $REDIRECTION_s$ is equal to enabled, the $EXPECTED_SID$ field of $REDIRECT_REC_s$ is not
 31 equal to 0, and SID_r is not equal to $EXPECTED_SID$, the mobile station shall enter the
 32 *System Determination Substate* with a wrong system indication (see 6.6.1.1). If
 33 $REDIRECTION_s$ is equal to enabled, the $EXPECTED_NID$ field of $REDIRECT_REC_s$ is not
 34 equal to 65535, and NID_r is not equal to $EXPECTED_NID$, the mobile station shall enter the
 35 *System Determination Substate* with a wrong network indication.

36 If $CDMACH_s$ is different from $CDMA_FREQ_r$, the mobile station shall set $CDMACH_s$
 37 = $CDMA_FREQ_r$. The mobile station shall then tune to the CDMA Channel.

38 The mobile station shall enter the *Timing Change Substate*.

6.6.1.4 Timing Change Substate

Figure 6.6.1.4-1 illustrates the mobile station timing changes that occur in this substate. The mobile station synchronizes its long code timing and system timing to those of the CDMA system, using the $PILOT_PN_S$, LC_STATE_S , and SYS_TIME_S values obtained from the received *Sync Channel Message*. SYS_TIME_S is equal to the System Time (see 1.2) corresponding to 320 ms past the end of the last 80 ms superframe (see Figure 7.1.3.2.1-1) of the received *Sync Channel Message* minus the pilot PN sequence offset. LC_STATE_S is equal to the system long code state (see 6.1.3.1.8) corresponding to SYS_TIME_S .

In the *Timing Change Substate*, the mobile station shall synchronize its long code timing to the CDMA system long code timing derived from LC_STATE_S , and synchronize its system timing to the CDMA system timing derived from SYS_TIME_S .

The mobile station shall:

- Set $PAGECH_S$ to the Primary Paging Channel (see 7.1.3.4);
- Set $PAGE_CHAN_S$ to '1';
- Set the stored message sequence numbers $CONFIG_MSG_SEQ_S$, $SYS_PAR_MSG_SEQ_S$, $ACC_MSG_SEQ_S$, $NGHBR_LST_MSG_SEQ_S$, $GEN_NGHBR_LST_MSG_SEQ_S$, $EXT_NGHBR_LST_MSG_SEQ_S$, $CHAN_LST_MSG_SEQ_S$, $EXT_SYS_PAR_MSG_SEQ_S$, and $GLOB_SERV_REDIR_MSG_SEQ_S$ variables to NULL (see 6.6.2.2);
- Set $IMSI_11_12_S$ and MCC_S to NULL;
- Perform registration initialization as specified in 6.6.5.5.1.3; and
- If the bits of $TMSI_CODE_{S-p}$ are not all equal to '1' and if SYS_TIME_S exceeds $TMSI_EXP_TIME_{S-p} \times 2^{12}$, the mobile station shall set all the bits of $TMSI_CODE_{S-p}$ to '1'.

The mobile station shall enter the *Mobile Station Idle State*.

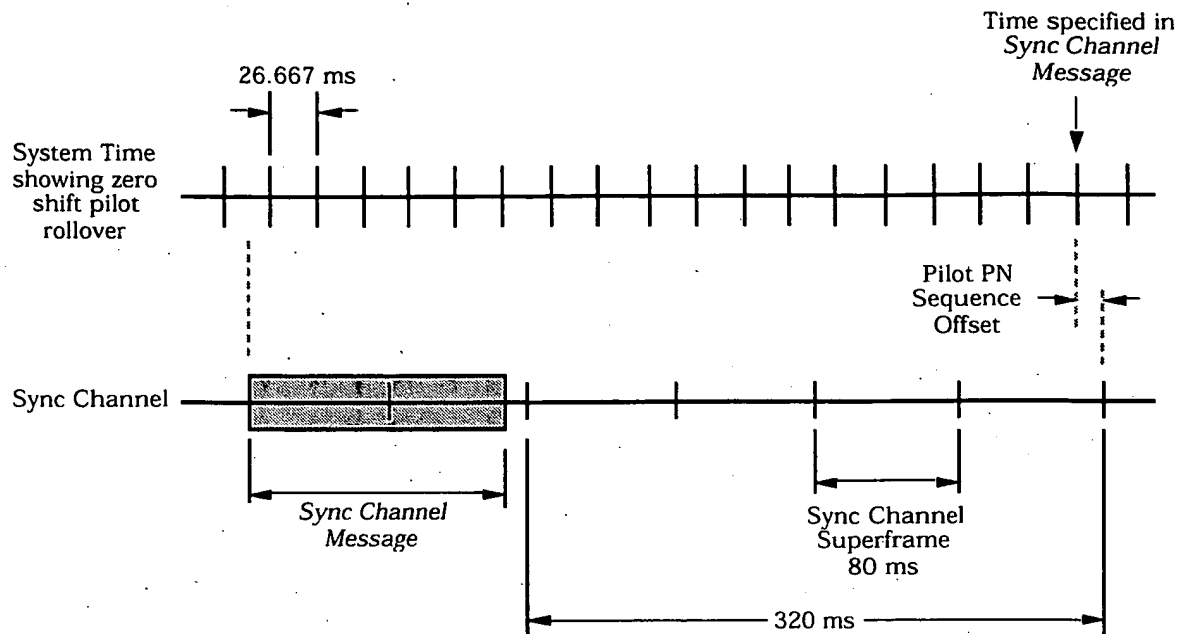


Figure 6.6.1.4-1. Mobile Station Internal Timing

6.6.2 Mobile Station Idle State

In this state, the mobile station monitors the Paging Channel. The mobile station can receive messages, receive an incoming call (mobile station terminated call), initiate a call (mobile station originated call), cancel a PACA call, initiate a registration, or initiate a message transmission.

Upon entering the *Mobile Station Idle State*, the mobile station shall set its code channel to $PAGECH_S$, shall set the Paging Channel data rate as determined by $PRAT_S$ and shall perform Paging Channel supervision as specified in 6.4.3.

If $REDIRECTION_S$, $PACA_S$, and $NDSS_ORIG_S$ are equal to disabled, the mobile station may exit the *Mobile Station Idle State* at any time and enter the *System Determination Substate* of the *Mobile Station Initialization State* with a reselection indication (see 6.6.1.1).

While in the *Mobile Station Idle State*, the mobile station shall perform the following procedures:

- The mobile station shall perform Paging Channel monitoring procedures as specified in 6.6.2.1.1.
- The mobile station shall perform message acknowledgment procedures as specified in 6.6.2.1.2.
- The mobile station shall perform registration procedures as specified in 6.6.2.1.3.
- The mobile station shall perform idle handoff procedures as specified in 6.6.2.1.4.
- The mobile station shall perform system reselection procedures as specified in 6.6.2.1.6.

- 1 • The mobile station shall perform the *Response to Overhead Information Operation* as
2 specified in 6.6.2.2 whenever the mobile station receives a system overhead message
3 (*System Parameters Message*, *CDMA Channel List Message*, *Extended System*
4 *Parameters Message*, *Neighbor List Message*, *Extended Neighbor List Message*,
5 *General Neighbor List Message*, *Global Service Redirection Message*, or *Access*
6 *Parameters Message*).
- 7 • The mobile station shall perform the *Mobile Station Page Match Operation* as
8 specified in 6.6.2.3 whenever it receives a *General Page Message*.
- 9 • The mobile station shall perform the *Mobile Station Order and Message Processing*
10 *Operation* as specified in 6.6.2.4 whenever a message or order directed to the mobile
11 station is received other than a *General Page Message*.
- 12 • The mobile station shall set NDSS_ORIG_s to disabled if directed by the user to
13 cancel the call origination.
- 14 • The mobile station shall perform the *Mobile Station Origination Operation* as
15 specified in 6.6.2.5 if directed by the user to initiate a call, or if NDSS_ORIG_s is
16 equal to enabled.
- 17 • The mobile station shall perform the *Mobile Station PACA Cancel Operation* as
18 specified in 6.6.2.8, if PACA_s is equal to enabled and any of the following conditions
19 are met:
 - 20 – PACA_CANCEL is equal to '1'; or
 - 21 – The mobile station is directed by the user to cancel the PACA call.
- 22 • If the PACA state timer expires, the mobile station shall perform the following:
 - 23 – The mobile station should enter the *Update Overhead Information Substate* of the
24 *System Access State* (see 6.6.3) with an origination indication within T_{33m}
25 seconds to re-originate the PACA call.
 - 26 – Otherwise, the mobile station shall perform the *Mobile Station PACA Cancel*
27 *Operation* as specified in 6.6.2.8.
- 28 • If the mobile station supports *Data Burst Message* transmission, it shall perform the
29 *Mobile Station Message Transmission Operation* as specified in 6.6.2.6 if directed by
30 the user to transmit a message.
- 31 • The mobile station shall perform the *Mobile Station Power-Down Operation* as
32 specified in 6.6.2.7 if directed by the user to power down.
- 33 • If the bits of TMSI_CODE_{s-p} are not all equal to '1' and if System Time (in 80 ms
34 units) exceeds TMSI_EXP_TIME_{s-p} × 2¹², the mobile station shall set all the bits of
35 TMSI_CODE_{s-p} to '1' within T_{66m} seconds.
- 36 • If the full-TMSI timer expires or has expired, the mobile station shall set all the bits
37 of TMSI_CODE_{s-p} to '1'. The mobile station shall update the registration variables
38 as described in 6.6.5.5.2.5.

6.6.2.1 Idle Procedures

6.6.2.1.1 Paging Channel Monitoring Procedures

6.6.2.1.1.1 General Overview

The Paging Channel is divided into 80 ms slots called Paging Channel slots. Paging and control messages for a mobile station operating in the non-slotted mode can be received in any of the Paging Channel slots; therefore, the non-slotted mode of operation requires the mobile station to monitor all slots.

6.6.2.1.1.1.1 General Overview for Individually Addressed Messages

The Paging Channel protocol provides for scheduling the transmission of messages for a specific mobile station in certain assigned slots. Support of this feature is optional and may be enabled by each mobile station. A mobile station that monitors the Paging Channel only during certain assigned slots is referred to as operating in the slotted mode. During the slots in which the Paging Channel is not being monitored, the mobile station can stop or reduce its processing for power conservation. A mobile station may not operate in the slotted mode in any state except the *Mobile Station Idle State*.

A mobile station operating in the slotted mode generally monitors the Paging Channel for one or two slots per slot cycle. The mobile station can specify its preferred slot cycle using the SLOT_CYCLE_INDEX field in the *Registration Message*, *Origination Message*, or *Page Response Message*. The mobile station can also specify its preferred slot cycle using the SLOT_CYCLE_INDEX field of the *Terminal Information* record of the *Status Response Message* or the *Extended Status Response Message*. In addition, the mobile station can also specify its preferred slot cycle using the SLOT_CYCLE_INDEX field of the *Terminal Information* record of the *Status Response Message* or the *Status Message* when in the *Mobile Station Control on the Traffic Channel State*. The length of the slot cycle, T , in units of 1.28 seconds,¹ is given by

$$T = 2^i,$$

where i is the selected slot cycle index (see 6.6.2.1.1.3).

A mobile station operating in the slotted mode may optionally monitor additional slots to receive broadcast messages and/or broadcast pages (see 6.6.2.1.1.3.3 and 6.6.2.1.1.3.4).

There are $16 \times T$ slots in a slot cycle.

SLOT_NUM is the Paging Channel slot number, modulo the maximum length slot cycle (2048 slots). That is, the value of SLOT_NUM is

$$\text{SLOT_NUM} = [t/4] \bmod 2048,$$

where t is the System Time in frames. For each mobile station, the starting times of its slot cycles are offset from the slot in which SLOT_NUM equals zero by a fixed, randomly selected number of slots as specified in 6.6.2.1.1.3.

¹ The minimum length slot cycle consists of 16 slots of 80 ms each, hence 1.28 seconds.

Figure 6.6.2.1.1.1-1 shows an example for a slot cycle length of 1.28 seconds, in which the computed value of PGSLOT (see 6.6.2.1.1.3) is equal to 6, so that one of the mobile station's slot cycles begins when SLOT_NUM equals 6. The mobile station begins monitoring the Paging Channel at the start of the slot in which SLOT_NUM equals 6. The next slot in which the mobile station must begin monitoring the Paging Channel is 16 slots later, i.e., the slot in which SLOT_NUM is 22.

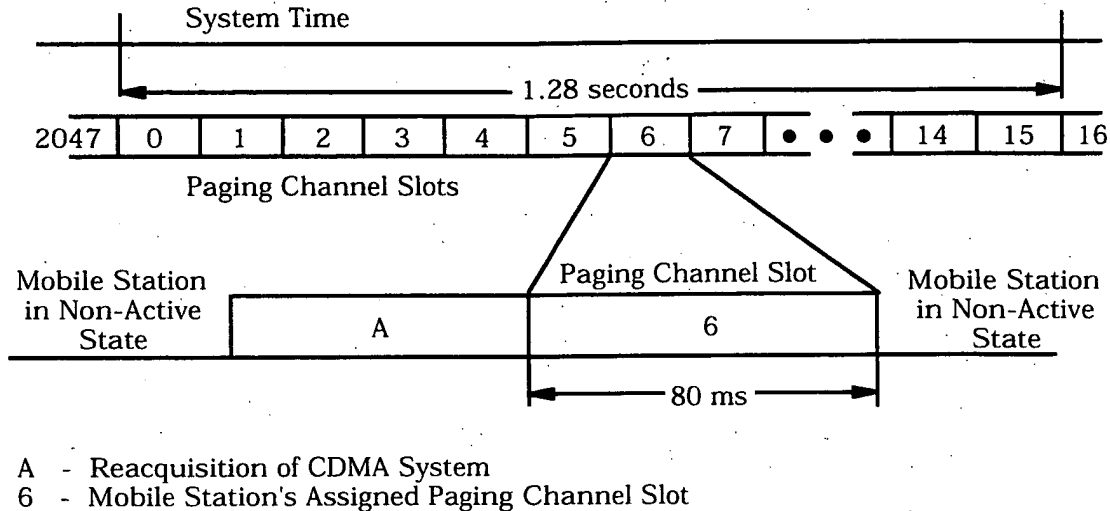


Figure 6.6.2.1.1.1-1. Mobile Station Idle Slotted Mode Structure Example

A *General Page Message* contains four fields, CLASS_0_DONE, CLASS_1_DONE, TMSI_DONE, and ORDERED_TMSIS, which indicate when a mobile station operating in the slotted mode may stop monitoring the Paging Channel.

When CLASS_0_DONE is set to '1' during a mobile station's assigned slot and the mobile station is operating in the slotted mode, no further messages or records addressed by a class 0 IMSI will be directed to the mobile station during the current slot. When CLASS_1_DONE is set to '1' during a mobile station's assigned slot and the mobile station is operating in the slotted mode, no further messages or records addressed by a class 1 IMSI will be directed to the mobile station during the current slot. Similarly, when TMSI_DONE is set to '1' during a mobile station's assigned slot and the mobile station is operating in the slotted mode, no further messages or records addressed by a TMSI will be directed to the mobile station during the current slot.

The field ORDERED_TMSIS, which when set to '1' during a mobile station's assigned slot, indicates that the base station has ordered TMSI page records directed to mobile stations operating in the slotted mode so that the resulting TMSI_CODE values are in ascending order in the *General Page Messages* in the slot.

A mobile station which is operating in the slotted mode, has a class 0 IMSI assigned, and does not have a TMSI assigned (all the bits of TMSI_CODE_{s-p} are equal to '1') may stop

1 monitoring the Paging Channel after processing a *General Page Message* containing
 2 CLASS_0_DONE equal to '1'. Similarly, a mobile station which is operating in the slotted
 3 mode, has a class 1 IMSI assigned, and does not have a TMSI assigned (all the bits of
 4 TMSI_CODE_{s-p} are equal to '1') may stop monitoring the Paging Channel after processing a
 5 *General Page Message* containing CLASS_1_DONE equal to '1'.

6 A mobile station which is operating in the slotted mode, has a class 0 IMSI assigned, and
 7 has a TMSI assigned (the bits of TMSI_CODE_{s-p} are not all equal to '1') may stop
 8 monitoring the Paging Channel after processing a *General Page Message* containing both
 9 CLASS_0_DONE equal to '1' and TMSI_DONE equal to '1'. Similarly, a mobile station which
 10 is operating in the slotted mode, has a class 1 IMSI assigned, and has a TMSI assigned (the
 11 bits of TMSI_CODE_{s-p} are not all equal to '1') may stop monitoring the Paging Channel after
 12 processing a *General Page Message* containing both CLASS_1_DONE equal to '1' and
 13 TMSI_DONE equal to '1'.

14 If ORDERED_TMSIS is equal to '1' and CLASS_0_DONE is equal to '1', a mobile station
 15 which has a class 0 IMSI assigned, and is operating in the slotted mode and has a TMSI
 16 assigned (the bits of TMSI_CODE_{s-p} are not all equal to '1') may stop monitoring the Paging
 17 Channel after processing a page record with a TMSI_CODE value of higher numerical value
 18 than TMSI_CODE_{s-p}.

19 If ORDERED_TMSIS is equal to '1' and CLASS_1_DONE is equal to '1', a mobile station
 20 which has a class 1 IMSI assigned, is operating in the slotted mode and has a TMSI
 21 assigned (the bits of TMSI_CODE_{s-p} are not all equal to '1') may stop monitoring the Paging
 22 Channel after processing a page record with a TMSI_CODE value of higher numerical value
 23 than TMSI_CODE_{s-p}.

24 The mobile station continues to monitor the Paging Channel for one additional slot unless,
 25 within its assigned slot, the mobile station receives a *General Page Message* containing the
 26 appropriate indicator permitting it to stop monitoring the Paging Channel (CLASS_0_DONE,
 27 CLASS_1_DONE, TMSI_DONE, or ORDERED_TMSIS equal to '1', whichever is appropriate).
 28 This allows the base station to carry over a message begun in the assigned slot into the
 29 following slot if necessary.

30 6.6.2.1.1.2 General Overview for Broadcast Messages

31 The Paging Channel protocol provides two methods for the transmission of broadcast
 32 messages. Each method enables mobile stations operating in the slotted mode or in the
 33 non-slotted mode to receive broadcast messages. A broadcast message on the Paging
 34 Channel is a *Data Burst Message* which has a broadcast address type. A mobile station
 35 operating in the slotted mode has assigned slots which it monitors to receive paging
 36 channel messages (see 6.6.2.1.1.1). A broadcast page is a record within a *General Page*
 37 *Message* which has a broadcast address type. A base station may transmit a broadcast
 38 page in an assigned slot to inform mobile stations monitoring that slot that a broadcast
 39 message will be transmitted in a predetermined subsequent slot. A slot which a mobile
 40 station monitors in order to receive either a broadcast page or a broadcast message is
 41 referred to as a broadcast slot.

6.6.2.1.1.2.1 Method 1: Multi-Slot Broadcast Message Transmission

According to this method, a broadcast message is sent in a sufficient number of assigned slots such that it may be received by all mobile stations that are operating in the slotted mode.

Figure 6.6.2.1.1.2.1-1 shows an example for the case when the maximum slot cycle index is equal to 0. In this example, the broadcast message fits in a single slot. The *Data Burst Message* is transmitted in 16 consecutive slots.

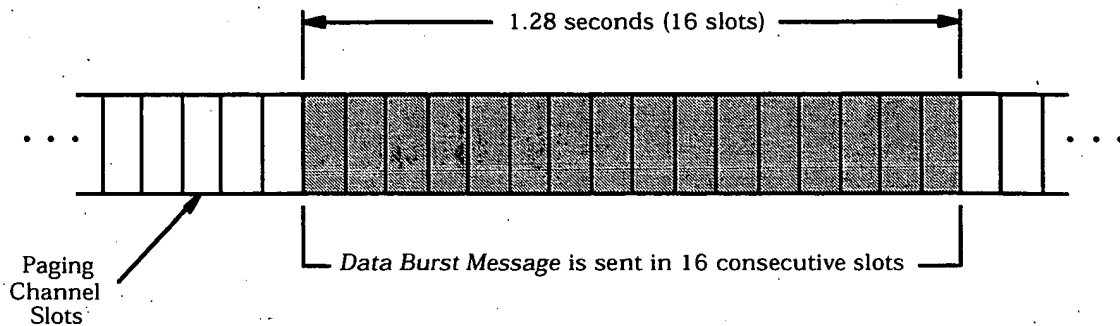


Figure 6.6.2.1.1.2.1-1. Multi-Slot Broadcast Message Transmission Example

6.6.2.1.1.2.2 Method 2: Periodic Broadcast Paging

According to this method, mobile stations configured to receive broadcast messages monitor a specific broadcast slot (the first slot of a broadcast paging cycle; see 6.6.2.1.1.3.3.). There are two methods of sending broadcast messages used with Periodic Broadcast Paging.

If all of the broadcast messages to be transmitted fit within the first slot of a broadcast paging cycle, they may all be transmitted in this broadcast slot. If there is a single broadcast message to be transmitted, it may be transmitted beginning in this broadcast slot.

Alternately, one or more broadcast pages may be transmitted in the first slot of a broadcast paging cycle. Each broadcast page is associated with a subsequent broadcast slot. For each broadcast page, an associated broadcast message may be transmitted in the associated subsequent broadcast slot. The broadcast slot for the associated broadcast message is determined according to the position of the broadcast page within the *General Page Message* transmitted in the first slot of the broadcast paging cycle.

Figure 6.6.2.1.1.2.2-1 shows an example of Periodic Broadcast Paging when the broadcast index is set to 1. A *General Page Message* containing three broadcast pages is transmitted in the first slot of the broadcast paging cycle. For each of the three broadcast pages, a *Data Burst Message* is transmitted in a subsequent slot.

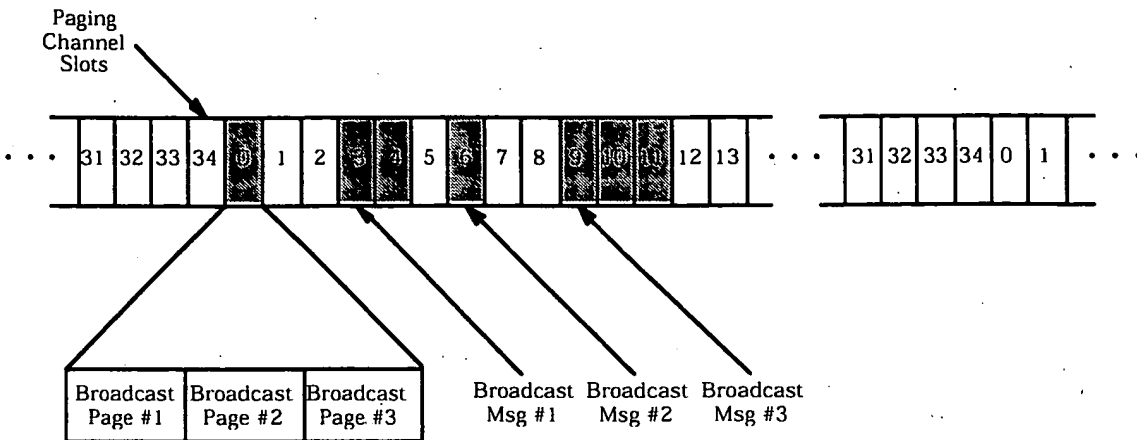


Figure 6.6.2.1.1.2.2-1. Periodic Broadcast Paging Example

6.6.2.1.1.2 Non-Slotted Mode Requirements

A mobile station operating in the non-slotted mode shall monitor the Paging Channel at all times. If the mobile station declares loss of the Paging Channel (see 6.4.3), the mobile station shall enter the *System Determination Substate* of the *Mobile Station Initialization State* with a system lost indication (see 6.6.1.1).

The mobile station shall operate in the non-slotted mode when $PACA_S$ is equal to enabled.

When a mobile station monitors the Paging Channel in any state other than the *Mobile Station Idle State*, it shall operate in the non-slotted mode.

6.6.2.1.1.3 Slotted Mode Requirements

The mobile station shall not operate in the slotted mode unless bit 5 of the station class mark is set to '1' (see 6.3.3).

The mobile station shall not operate in the slotted mode when $PACA_S$ is equal to enabled.

During operation in the slotted mode, the mobile station shall ensure that its stored configuration parameter values are current (see 6.6.2.2). The mobile station shall not operate in the slotted mode if its configuration parameters are not current.

If the mobile station declares a loss of the Paging Channel (see 6.4.3), the mobile station shall enter the *System Determination Substate* of the *Mobile Station Initialization State* with a system lost indication (see 6.6.1.1).

6.6.2.1.1.3.1 Monitoring Assigned Slots

For each of its assigned slots, the mobile station shall begin monitoring the Paging Channel in time to receive the first bit of the slot. If the mobile station is not configured to receive broadcast addresses, the mobile station shall continue to monitor the Paging Channel until one of the following conditions is satisfied:

- 1 • The mobile station has a class 0 IMSI assigned, all the bits of TMSI_CODE_{s-p} are
2 equal to '1', and the mobile station receives a *General Page Message* with
3 CLASS_0_DONE set to '1'; or
- 4 • The mobile station has a class 1 IMSI assigned, all the bits of TMSI_CODE_{s-p} are
5 equal to '1', and the mobile station receives a *General Page Message* with
6 CLASS_1_DONE set to '1'; or
- 7 • The mobile station has a class 0 IMSI assigned, the bits of TMSI_CODE_{s-p} are not
8 all equal to '1', and the mobile station receives a *General Page Message* with
9 CLASS_0_DONE set to '1' and TMSI_DONE set to '1'; or
- 10 • The mobile station has a class 1 IMSI assigned, the bits of TMSI_CODE_{s-p} are not
11 all equal to '1', and the mobile station receives a *General Page Message* with
12 CLASS_1_DONE set to '1' and TMSI_DONE set to '1'; or
- 13 • The mobile station has a class 0 IMSI assigned, the bits of TMSI_CODE_{s-p} are not
14 all equal to '1', and the mobile station receives a *General Page Message* with
15 CLASS_0_DONE set to '1', ORDERED_TMSIS set to '1' and a record with TMSI code
16 value greater than TMSI_CODE_{s-p}; or
- 17 • The mobile station has a class 1 IMSI assigned, the bits of TMSI_CODE_{s-p} are not
18 all equal to '1', and the mobile station receives a *General Page Message* with
19 CLASS_1_DONE set to '1', ORDERED_TMSIS set to '1' and a record with
20 TMSI_CODE value greater than TMSI_CODE_{s-p}; or
- 21 • The mobile station monitors the assigned slot and the slot following the assigned
22 slot, and the mobile station receives at least one valid message (see 6.4.3).

23 If the mobile station is configured to receive broadcast addresses, the mobile station shall
24 continue to monitor the Paging Channel until one of the preceding conditions is satisfied
25 and should monitor the Paging Channel until it has received a *General Page Message* with
26 BROADCAST_DONE equal to '1'.

27 For each broadcast slot monitored to receive broadcast pages or broadcast messages which
28 is not one of its assigned slots, the mobile station should begin monitoring the Paging
29 Channel in time to receive the first bit of the broadcast slot. The mobile station should
30 continue to monitor the Paging Channel until one of the following conditions is satisfied:

- 31 • The mobile station receives a *General Page Message* with BROADCAST_DONE set to
32 '1'; or
- 33 • The mobile station monitors the Paging Channel to receive all messages beginning
34 in the broadcast slot and in the slot following the broadcast slot, and the mobile
35 station receives at least one valid message (see 6.4.3).

36 To determine its assigned slots, the mobile station shall use the hash function specified in
37 6.6.7.1 to select a number, PGSLOT, in the range 0 to 2047 (spanning the maximum slot
38 cycle length, which is 163.84 seconds). The mobile station's assigned slots shall be those
39 slots in which

$$40 \quad (\lfloor t/4 \rfloor - \text{PGSLOT}) \bmod (16 \times T) = 0,$$

where t is the System Time in frames and T is the slot cycle length in units of 1.28 seconds given by

$$T = 2^i,$$

where i is the slot cycle index.

6.6.2.1.1.3.2 Determination of the Slot Cycle Index

If the SID and NID of the current base station (SID_S and NID_S , as stored from the *System Parameters Message*) do not match any entry of $SID_NID_LIST_S$, the mobile station shall use a slot cycle index no greater than the smaller of $MAX_SLOT_CYCLE_INDEX_S$ and 1; otherwise, the mobile station shall use a slot cycle index no greater than $SLOT_CYCLE_INDEX_S$ (see 6.6.2.2.1.6).

If the mobile station is directed by the user to modify the preferred slot cycle index ($SLOT_CYCLE_INDEX_p$), the mobile station shall perform parameter-change registration (see 6.6.5.1.6).

6.6.2.1.1.3.3 Slot Cycles for Broadcast Paging

Distribution of broadcast messages relies on specially defined Paging Channel slot cycles. The definitions are as follows:

Maximum paging cycle: A maximum paging cycle is a Paging Channel slot cycle (see 6.6.2.1.1.3.1) having a duration of M slots such that:

$$M = 2^i \times 16, 0 \leq i \leq 7$$

where $i = MAX_SLOT_CYCLE_INDEX_S$ as received in the *System Parameters Message*.

The first slot of each maximum paging cycle is any Paging Channel slot in which

$$\lfloor t/4 \rfloor \bmod M = 0,$$

where t represents system time in frames.

Broadcast paging cycle: A broadcast paging cycle is a Paging Channel slot cycle (see 6.6.2.1.1.3.1) having a duration of $B + 3$ slots where:

$$B = 2^i \times 16, 1 \leq i \leq 7$$

where $i = BCAST_INDEX_S$ as received in the *Extended System Parameters Message*, or set by default when the *Extended System Parameters Message* is not sent.

The first slot of each broadcast paging cycle is any Paging Channel slot in which

$$\lfloor t/4 \rfloor \bmod (B + 3) = 0,$$

where t represents system time in frames.

6.6.2.1.1.3.4 Monitoring Paging Channel Broadcasts

The following requirements apply to mobile stations supporting the reception of broadcast messages.

If $BCAST_INDEX_S$ is equal to '000', the mobile station shall monitor only its assigned Paging Channel slots (see 6.6.2.1.1.3.1).

If $BCAST_INDEX_S$ is not equal to '000', and the mobile station is configured to receive messages addressed to broadcast addresses, the mobile station should also monitor the Paging Channel beginning with the first slot of each broadcast paging cycle (see 6.6.2.1.1.3.3).

If the mobile station receives a broadcast page containing a burst type and broadcast address that the mobile station has been configured to receive (see 6.6.2.3), the mobile station should monitor the slot in which the corresponding broadcast Paging Channel message will be sent, determined as follows:

- The mobile station shall consider a broadcast page to have been received in the paging slot in which the *General Page Message* containing the broadcast page began.
- If $BCAST_INDEX_S$ is not equal to '000', the paging slot containing the broadcast page is defined as the reference slot.
- Let n represent the ordinal number of the broadcast page relative to other broadcast pages that are contained in the same *General Page Message* ($n = 1, 2, 3, \dots$). The mobile station should monitor the Paging Channel slot that occurs $n \times 3$ paging slots after the reference slot.

After receiving a broadcast message or a broadcast page and a corresponding broadcast Paging Channel message when $BCAST_INDEX_S$ is not equal to '000', the mobile station should discard all further broadcast pages and all further broadcast Paging Channel messages containing the same $BURST_TYPE$ and BC_ADDR fields that are received within $4 \times (B + 3)$ paging slots of the first paging slot in the broadcast paging cycle in which the broadcast page or broadcast message was first received. ($B + 3$ is the duration of the broadcast paging cycle as defined in 6.6.2.1.1.3.3).

6.6.2.1.1.3.5 Support of Broadcast Delivery Options

A mobile station configured to receive broadcast messages shall support reception of broadcast messages transmitted using Multi-Slot Broadcast Message Transmission (see 7.6.2.4.1.2.1.1).

A mobile station configured to receive broadcast messages shall support reception of broadcast messages transmitted using Periodic Broadcast Paging (see 7.6.2.4.1.2.1.2).

6.6.2.1.2 Acknowledgment Procedures

Acknowledgment procedures facilitate the reliable exchange of messages between the base station and the mobile station. The mobile station uses the fields ACK_TYPE (acknowledgment address type), ACK_SEQ (acknowledgment sequence number), MSG_SEQ (message sequence number), ACK_REQ (acknowledgment required), and $VALID_ACK$ (valid

acknowledgment) to support this mechanism. These fields are referred to as layer 2 fields, and the acknowledgment procedures are referred to as layer 2 procedures. All other message fields and the processing thereof are referred to as pertaining to layer 3. (See Annex C for further discussion of layering.)

Acknowledgments of messages received on the Paging Channel shall be sent on the Access Channel (see 6.6.3).

When sending a message that includes an acknowledgment, the mobile station shall set the VALID_ACK field to '1' and shall set the ACK_TYPE and ACK_SEQ fields equal to the ADDR_TYPE and MSG_SEQ fields, respectively, of the message being acknowledged. For acknowledgment of a *General Page Message*, the mobile station shall set the ACK_SEQ field equal to the MSG_SEQ field and shall set the ACK_TYPE field according to the PAGE_CLASS field of the record addressed to the mobile station as follows:

- If the PAGE_CLASS is equal to '00' or '01', the mobile station shall set the ACK_TYPE field to '010'.
- If the PAGE_CLASS is equal to '10', the mobile station shall set the ACK_TYPE field to '011'.

When sending a message that does not include an acknowledgment, the mobile station shall set the VALID_ACK field to '0' and shall set the ACK_TYPE and ACK_SEQ fields equal to the ADDR_TYPE and MSG_SEQ fields, respectively, of the last message received that required acknowledgment. If no such message has been received, the mobile station shall set the ACK_TYPE field to '000' and shall set the ACK_SEQ field to '111'.

Unless otherwise specified in the requirements for processing a specific message, the mobile station shall transmit an acknowledgment in response to any message received that is addressed to the mobile station and that has the ACK_REQ field set to '1'. The mobile station shall transmit a *Page Response Message* including an acknowledgment in response to each record of a *General Page Message* addressed to the mobile station.² If a specific message is required in response to any other message requiring acknowledgment, the acknowledgment shall be included with the response. If no specific message is required to be transmitted in response to a received message requiring acknowledgment, the mobile station shall include the acknowledgment in a *Mobile Station Acknowledgment Order* (see 6.7.3).

If no message requiring acknowledgment has been received, the mobile station shall not include an acknowledgment in any transmitted message until a message is received that requires acknowledgment. After a message including an acknowledgment has been sent, the mobile station shall not include an acknowledgment in any subsequent transmitted message until another message is received that requires acknowledgment.

The mobile station shall detect duplicate received messages by the following rules.

The mobile station shall consider two messages or records (except records in *General Page Messages*) to be duplicates if all of the following are true:

² This message does not have an ACK_REQ field.

- 1 • The messages (records) were received on the same Paging Channel; and
- 2 • The messages (records) contain the same values in the ADDR_TYPE, MSG_SEQ and
- 3 ACK_REQ fields;³ and
- 4 • The messages (records) were received within T_{4m} seconds (see Annex D) of each
- 5 other (see Figure 6.6.2.1.2-1); and
- 6 • An address match was declared (see 6.6.2.1.5) for both messages (records).

7 The mobile station shall consider two page records (as contained in *General Page Messages*)
8 to be duplicates if all of the following are true:

- 9 • The records were received on the same Paging Channel; and
- 10 • The records contain the same values in the MSG_SEQ field; and
- 11 • The records were received in messages received within T_{4m} seconds of each other
- 12 (see Figure 6.6.2.1.2-1), or in the same message; and
- 13 • A page match was declared (see 6.6.2.3) for both records.

14 The mobile station shall then discard, without further processing, any message or page
15 record that is a duplicate of one previously received.

16 Paging Channels shall be considered different if any of the following is true:

- 17 • The Paging Channels are transmitted by different base stations, or
- 18 • The Paging Channels are transmitted on different code channels (see 7.1.3.4.8), or
- 19 • The Paging Channels are transmitted on different CDMA Channels (see 7.1.1.1).

20 The mobile station shall consider messages to be different if they are not duplicates
21 according to the rules given above. The mobile station shall process all messages that are
22 considered to be different.

23

³ Separate sequence numbers are used for messages requiring acknowledgement and messages not requiring acknowledgement on the Paging Channel.

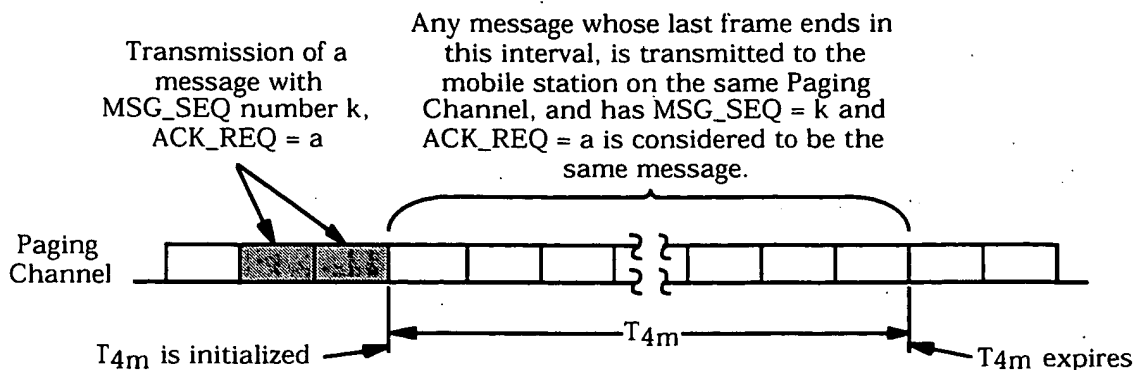


Figure 6.6.2.1.2-1. Time Interval for Duplicate Message Detection

6.6.2.1.3 Registration

While in the *Mobile Station Idle State*, the mobile station shall perform the registration procedures specified in 6.6.5.5.2.1.

6.6.2.1.4 Idle Handoff

6.6.2.1.4.1 Pilot Search

An idle handoff occurs when a mobile station has moved from the coverage area of one base station into the coverage area of another base station during the *Mobile Station Idle State*. If the mobile station detects a Pilot Channel signal from another base station, that is sufficiently stronger than that of the current base station, the mobile station determines that an idle handoff should occur.

Pilot Channels are identified by their offsets relative to the zero offset pilot PN sequence (see 7.1.3.2.1). Pilot offsets are grouped into sets describing their status with regard to pilot searching.

The following sets of pilot offsets are defined for a mobile station in the *Mobile Station Idle State*. Each pilot offset is a member of only one set.

- Active Set: The pilot offset of the Forward CDMA Channel whose Paging Channel is being monitored.
- Neighbor Set: The offsets of the Pilot Channels that are likely candidates for idle handoff. The members of the Neighbor Set are specified in the *Neighbor List Message*, *Extended Neighbor List Message*, and the *General Neighbor List Message*.
- Remaining Set: The set of all possible pilot offsets in the current system (integer multiples of $PILOT_INC_S$) on the current CDMA frequency assignment, excluding the pilots in the Neighbor Set and the Active Set.

The mobile station shall support a Neighbor Set size of at least N_{8m} pilots (see Annex D).

1 In the *Mobile Station Idle State*, the mobile station shall continuously search for the
 2 strongest Pilot Channel signal on the corresponding CDMA frequency assignment whenever
 3 it monitors the Paging Channel.

4 The mobile station may search other frequencies and band classes. For example, if a pilot
 5 in the Neighbor List is on a different frequency assignment than that of the mobile station,
 6 this frequency should be included in the search criteria. Search performance criteria are
 7 defined in TIA/EIA-98-B and ANSI J-STD-018.

8 This search should be governed by the following:

- 9 • Active Set: The search window size for the pilot in the Active Set shall be the
 10 number of PN chips specified in Table 6.6.6.2.1-1 corresponding to SRCH_WIN_A_S.
 11 The mobile station should center the search window for the pilot of the Active Set
 12 around the earliest arriving usable multipath component of the pilot. If the mobile
 13 station receives a value greater than or equal to 13 for SRCH_WIN_A_r, it may store
 14 and use the value 13 in SRCH_WIN_A_S.
- 15 • Neighbor Set: The search window size for each pilot in the Neighbor Set shall be the
 16 number of PN chips specified in Table 6.6.6.2.1-1 corresponding to
 17 SRCH_WIN_NGHBR_S field of the NGHBR_REC for the pilot. The mobile station
 18 should center the search window for each pilot in the Neighbor Set around the
 19 pilot's PN sequence offset using timing defined by the mobile station's time reference
 20 (see 6.1.5.1). The mobile station should use the SEARCH_PRIORITY field of the
 21 NGHBR_REC for the corresponding pilot to schedule its neighbor search.
 22 If the mobile station supports hopping pilot beacons and the TIMING_INCL field of
 23 the NGHBR_REC for the corresponding pilot is equal to '1', then the mobile station
 24 shall use the information included in the NGHBR_TX_OFFSET,
 25 NGHBR_TX_DURATION, and NGHBR_TX_PERIOD fields of the NGHBR_REC for the
 26 corresponding pilot to schedule the time for searching the neighbor.
- 27 • Remaining Set: The search window size for each pilot in the Remaining Set shall be
 28 the number of PN chips specified in Table 6.6.6.2.1-1 corresponding to
 29 SRCH_WIN_R_S. The mobile station should center the search window for each pilot
 30 in the Remaining Set around the pilot's PN sequence offset using timing defined by
 31 the mobile station's time reference (see 6.1.5.1). The mobile station should only
 32 search for Remaining Set pilots whose pilot PN sequence offset indices are equal to
 33 integer multiples of PILOT_INC_S.

34 If the mobile station determines that one of the Neighbor Set or Remaining Set Pilot
 35 Channel signals is sufficiently stronger (see TIA/EIA-98-B and ANSI J-STD-018) than the
 36 Pilot Channel of the Active Set, the mobile station should perform an idle handoff as
 37 specified in 6.6.2.1.4.2.

38 A mobile station operating in slotted mode, which is successfully demodulating the Paging
 39 Channel, should not perform an idle handoff while it is required to monitor its assigned slot
 40 (see 6.6.2.1.1.3.1).

6.6.2.1.4.2 Idle Handoff Procedures

While performing an idle handoff, the mobile station shall operate in the non-slotted mode until the mobile station has received at least one valid message on the new Paging Channel. Following the reception of this message the mobile station may resume slotted mode operation in accordance with 6.6.2.1.1.3. After performing an idle handoff, the mobile station shall discard all unprocessed messages received on the old Paging Channel.

If the new base station is listed in NGHBR_REC_LIST for the old base station (see 6.6.2.2.3, 6.6.2.2.7, and 6.6.2.1.4.1), the mobile station shall use the corresponding 3-bit NGHBR_CONFIG field to determine the actions required to transition to the new base station. If the new base station is not listed in NGHBR_REC_LIST, the mobile station shall perform the handoff operation using the same procedure as for a pilot in NGHBR_REC_LIST with the NGHBR_CONFIG field set to '011'.

If the NGHBR_CONFIG field is '000', the mobile station shall perform the following:

- The mobile station shall set ACC_MSG_SEQ_s and CURR_ACC_MSG_SEQ to NULL (see 6.6.2.2) and shall set PILOT_PN_s to the pilot offset index of the base station transmitting the new Paging Channel.
- The mobile station shall set CONFIG_MSG_SEQ_s to NULL.
- If the mobile station has not stored configuration parameters for the new Paging Channel, or if the stored information is not current (see 6.6.2.2), the mobile station shall set SYS_PAR_MSG_SEQ_s, NGHBR_LST_MSG_SEQ_s, EXT_NGHBR_LST_MSG_SEQ_s, GEN_NGHBR_LST_MSG_SEQ_s, CHAN_LST_MSG_SEQ_s, EXT_SYS_PAR_MSG_SEQ_s, and GLOB_SERV_REDIR_MSG_SEQ_s to NULL.
- If the stored information for the new Paging Channel is current, the mobile station shall set NGHBR_REC_LIST to the stored information for the new Paging Channel.
- The mobile station shall begin monitoring the Paging Channel of the new base station, using the same code channel and CDMA Channel.
- If PACA_s is equal to enabled, the mobile station shall enter the *Update Overhead Information Substate* of the System Access State (see 6.6.3) with an origination indication within T_{33m} seconds to re-originate the PACA call using the new base station.

If the NGHBR_CONFIG field is '001', the mobile station shall perform the following:

- The mobile station shall set ACC_MSG_SEQ_s and CURR_ACC_MSG_SEQ to NULL and shall set PILOT_PN_s to the pilot offset index of the base station transmitting the new Paging Channel.

The mobile station shall set CONFIG_MSG_SEQ_s to NULL.

- 1 • If the mobile station has not stored configuration parameters for the Primary Paging
2 Channel of the new base station, or if the stored information is not current (see
3 6.6.2.2), the mobile station shall set SYS_PAR_MSG_SEQ_s,
4 NGHBR_LST_MSG_SEQ_s, EXT_NGHBR_LST_MSG_SEQ_s,
5 GEN_NGHBR_LST_MSG_SEQ_s, CHAN_LST_MSG_SEQ_s, EXT_SYS_PAR_MSG_SEQ_s,
6 and GLOB_SERV_REDIR_MSG_SEQ_s to NULL.
- 7 • If the stored information for the new Paging Channel is current, the mobile station
8 shall set NGHBR_REC_LIST to the stored information for the new Paging Channel.
9 The mobile station shall set PAGE_CHAN_s to '1' and PAGECH_s to the Primary Paging
10 Channel.
- 11 • The mobile station shall begin monitoring the Primary Paging Channel of the new
12 base station, using the same CDMA Channel.
- 13 • If PACA_s is equal to enabled, the mobile station shall enter the *Update Overhead*
14 *Information Substate* of the *System Access State* (see 6.6.3) with an origination
15 indication within T_{33m} seconds to re-originate the PACA call using the new base
16 station.

17 If the NGHBR_CONFIG field is '010', the mobile station shall perform the following:

- 18 • The mobile station shall set ACC_MSG_SEQ_s and CURR_ACC_MSG_SEQ to NULL
19 and shall set PILOT_PN_s to the pilot offset index of the base station transmitting the
20 new Paging Channel.
- 21 • The mobile station shall set CONFIG_MSG_SEQ_s to NULL.
- 22 • If the mobile station has not stored configuration parameters for the Primary Paging
23 Channel of the new base station, or if the stored information is not current (see
24 6.6.2.2), the mobile station shall set SYS_PAR_MSG_SEQ_s,
25 NGHBR_LST_MSG_SEQ_s, EXT_NGHBR_LST_MSG_SEQ_s,
26 GEN_NGHBR_LST_MSG_SEQ_s, CHAN_LST_MSG_SEQ_s, EXT_SYS_PAR_MSG_SEQ_s,
27 and GLOB_SERV_REDIR_MSG_SEQ_s to NULL.
- 28 • If the stored information for the new Paging Channel is current, the mobile station
29 shall set NGHBR_REC_LIST to the stored information for the new Paging Channel.
- 30 • The mobile station shall set PAGE_CHAN_s to '1' and PAGECH_s to the Primary Paging
31 Channel. The mobile station shall set CDMACH_s to the first CDMA Channel given
32 in the *CDMA Channel List Message* for the old base station, tune to the new CDMA
33 channel, and begin monitoring the Primary Paging Channel of the new base station.
- 34 • If PACA_s is equal to enabled, the mobile station shall enter the *Update Overhead*
35 *Information Substate* of the *System Access State* (see 6.6.3) with an origination
36 indication within T_{33m} seconds to re-originate the PACA call using the new base
37 station.

38 If the NGHBR_CONFIG field is '011', the mobile station shall perform the following:

- 39 • Set mobile station enter the *System Determination Substate* of the *Mobile Station*
40 *Initialization State* with a new system indication (see 6.6.1.1).

6.6.2.1.5 Address Recognition for Other than the General Page Message

When the mobile station monitors the Paging Channel, the mobile station shall use the following rules to determine an address match.

6.6.2.1.5.1 ESN Addressed Messages

If the ADDR_TYPE is equal to '001' (the address is an ESN address), the mobile station shall declare an address match if the addressed ESN equals the mobile station's ESN.

6.6.2.1.5.2 IMSI Addressed Messages

If the ADDR_TYPE is equal to '000' (the address is an IMSI_S address), the mobile station shall declare an address match if the mobile station's IMSI_O is set to the IMSI_M (see 6.3.1), and IMSI_O_S_s is equal to the value of the IMSI_S subfield received in the ADDRESS field (see 7.7.2.3.1).

If the ADDR_TYPE is equal to '010' (the address is an IMSI address), the mobile station shall use the following procedures:

- If IMSI_CLASS is equal to '0' and IMSI_CLASS_0_TYPE is equal to '00', the mobile station shall declare an address match if the following conditions are met:
 - The mobile station's IMSI_O is a class 0 IMSI (see 6.3.1),
 - IMSI_O_11_12_s is equal to IMSI_11_12_s,
 - IMSI_O_S_s is equal to the IMSI_S received in the IMSI class 0 type specific subfield (see 7.7.2.3.1), and
 - MCC_O_s is equal to MCC_s.
- If IMSI_CLASS is equal to '0' and IMSI_CLASS_0_TYPE is equal to '01', the mobile station shall declare an address match if the following conditions are met:
 - The mobile station's IMSI_O is a class 0 IMSI,
 - IMSI_O_S_s is equal to the IMSI_S received in the IMSI class 0 type specific subfield (see 7.7.2.3.1),
 - IMSI_O_11_12_s is equal to the IMSI_11_12 received in the IMSI class 0 type specific subfield (see 7.7.2.3.1), and
 - The MCC_O_s is equal to MCC_s.
- If IMSI_CLASS is equal to '0' and IMSI_CLASS_0_TYPE is equal to '10', the mobile station shall declare an address match if the following conditions are met:
 - The mobile station's IMSI_O is a class 0 IMSI,
 - IMSI_O_S_s is equal to the IMSI_S received in the IMSI class 0 type specific subfield (see 7.7.2.3.1),
 - IMSI_O_11_12_s is equal to IMSI_11_12_s, and
 - MCC_O_s is equal to the MCC received in the IMSI class 0 type specific subfield (see 7.7.2.3.1).

- 1 • If IMSI_CLASS is equal to '0' and IMSI_CLASS_0_TYPE is equal to '11', the mobile
2 station shall declare an address match if the following conditions are met:
 - 3 – The mobile station's IMSI_O is a class 0 IMSI,
 - 4 – IMSI_O_S_S is equal to the IMSI_S received in the IMSI class 0 type specific
5 subfield (see 7.7.2.3.1),
 - 6 – IMSI_O_11_12_S is equal to the IMSI_11_12 received in the IMSI class 0 type
7 specific subfield (see 7.7.2.3.1), and
 - 8 – MCC_O_S is equal to the MCC received in the IMSI class 0 type specific subfield
9 (see 7.7.2.3.1).
- 10 • If IMSI_CLASS is equal to '1' and IMSI_CLASS_1_TYPE is equal to '0', the mobile
11 station shall declare an address match if the following conditions are met:
 - 12 – The mobile station's IMSI_O is a class 1 IMSI (see 6.3.1),
 - 13 – IMSI_O_S_S is equal to the IMSI_S received in the IMSI class 1 type specific
14 subfield (see 7.7.2.3.1),
 - 15 – IMSI_O_11_12_S is equal to the IMSI_11_12 received in the IMSI class 1 type
16 specific subfield (see 7.7.2.3.1),
 - 17 – MCC_O_S is equal to MCC_S, and
 - 18 – The IMSI_O_ADDR_NUM_S is equal to IMSI_ADDR_NUM received in the IMSI
19 class 1 type specific subfield (see 7.7.2.3.1).
- 20 • If IMSI_CLASS is equal to '1' and IMSI_CLASS_1_TYPE is equal to '1', the mobile
21 station shall declare an address match if the following conditions are met:
 - 22 – The mobile station's IMSI_O is a class 1 IMSI,
 - 23 – IMSI_O_S_S is equal to the IMSI_S received in the IMSI class 1 type specific
24 subfield (see 7.7.2.3.1),
 - 25 – IMSI_O_11_12_S is equal to the IMSI_11_12 received in the IMSI class 1 type
26 specific subfield (see 7.7.2.3.1),
 - 27 – MCC_O_S is equal to the MCC received in the IMSI class 1 type specific subfield
28 (see 7.7.2.3.1), and
 - 29 – The IMSI_O_ADDR_NUM_S is equal to IMSI_ADDR_NUM received in the IMSI
30 class 1 type specific subfield (see 7.7.2.3.1).

31 6.6.2.1.5.3 TMSI Addressed Messages

32 If the ADDR_TYPE is equal to '011' (the address is a TMSI address), the mobile station shall
33 declare an address match if the following conditions are met:

- 34 • The bits of TMSI_CODE_{S-p} are not all equal to '1' and the received ADDR_LEN is less
35 than or equal to four:
 - 36 – ASSIGNING_TMSI_ZONE_LEN_{S-p} is equal to TMSI_ZONE_LEN_S,

- 1 - The least significant ASSIGNING_TMSI_ZONE_LEN_{S-P} octets of
- 2 ASSIGNING_TMSI_ZONE_{S-P} are equal to TMSI_ZONE_S.
- 3 - The received ADDRESS (TMSI_CODE_ADDR) is equal to the ADDR_LEN least
- 4 significant octets of TMSI_CODE_{S-P}, and
- 5 - Each of the four minus ADDR_LEN most significant octets of TMSI_CODE_{S-P} are
- 6 equal to '00000000'.
- 7 • The bits of TMSI_CODE_{S-P} are not all equal to '1' and the received ADDR_LEN is
- 8 greater than four:
 - 9 - The ASSIGNING_TMSI_ZONE_LEN_{S-P} most significant octets of the received
 - 10 ADDRESS (TMSI_ZONE) are equal to the least significant
 - 11 ASSIGNING_TMSI_ZONE_LEN_{S-P} octets of TMSI_ZONE_{S-P}.
 - 12 - ADDR_LEN minus four is equal to ASSIGNING_TMSI_ZONE_LEN_{S-P}, and
 - 13 - The least significant four octets of ADDRESS (TMSI_CODE_ADDR) are equal to
 - 14 TMSI_CODE_{S-P}.

15 6.6.2.1.5.4 Broadcast Addressed Messages

16 If the ADDR_TYPE is equal to '101' (the address is a broadcast address), the mobile station
17 shall declare an address match if the following conditions are met:

- 18 • The mobile station is configured to receive broadcast addresses;
- 19 • The message is a *Data Burst Message*;
- 20 • The ADDRESS field of the *Data Burst Message* is equal to a broadcast address that
- 21 the mobile station is configured to receive; and
- 22 • The BURST_TYPE field of the *Data Burst Message* is equal to a burst type that the
- 23 mobile station is configured to receive.

24 6.6.2.1.6 System Reselection Procedures

25 The mobile station shall enter the *System Determination Substate* of the *Mobile Station*
26 *Initialization State* with a system reselection indication (see 6.6.1.1) if the following are true:

- 27 • RESELECT_INCLUDED_S is equal to '1';
- 28 • The following inequality is satisfied:
 - 29 - $20 \times \log_{10} (E_c/I_o) < EC_IO_THRESH_S$
 - 30 where E_c/I_o is the measured E_c/I_o of the active pilot; and
- 31 • The following inequality is satisfied:
 - 32 $pilot_power < EC_THRESH_S - 115$
 - 33 where $pilot_power$ (dBm/1.23 MHz) = $-20 \times \log_{10} (E_c/I_o)$ (dB) + mean input power
 - 34 (dBm/1.23 MHz) and E_c/I_o is the measured E_c/I_o of the active pilot.

6.6.2.2 Response to Overhead Information Operation

The overhead messages on the Paging Channel are:

- *System Parameters Message*
- *Access Parameters Message*
- *Neighbor List Message*
- *CDMA Channel List Message*
- *Extended System Parameters Message*
- *Global Service Redirection Message*
- *Extended Neighbor List Message*
- *General Neighbor List Message*

The *Response to Overhead Information Operation* is performed whenever the mobile station receives an overhead message. The mobile station updates internally stored information from the received message's data fields.

Configuration parameters and access parameters are received in the configuration messages and the *Access Parameters Message*. The configuration messages are:

- *System Parameters Message*
- *Neighbor List Message*
- *CDMA Channel List Message*
- *Extended System Parameters Message*
- *Global Service Redirection Message*
- *Extended Neighbor List Message*
- *General Neighbor List Message*

Associated with the set of configuration messages sent on each Paging Channel is a configuration message sequence number (CONFIG_MSG_SEQ). When the contents of one or more of the configuration messages change, the configuration message sequence number is incremented. For each of the configuration messages received, the mobile station stores the configuration message sequence number contained in the configuration message (SYS_PAR_MSG_SEQ_s, NGHBR_LIST_MSG_SEQ_s, EXT_NGHBR_LST_MSG_SEQ_s, GEN_NGHBR_LST_MSG_SEQ_s, CHAN_LIST_MSG_SEQ_s, EXT_SYS_PAR_MSG_SEQ_s, or GLOB_SERV_REDIR_MSG_SEQ_s). The mobile station also stores the most recently received configuration message sequence number (CONFIG_MSG_SEQ_s) contained in any message (see 6.6.2.2.1, 6.6.2.2.3, 6.6.2.2.4, 6.6.2.2.5, 6.6.2.2.6, 6.6.2.2.7, 6.6.2.2.8, and 6.6.2.3). The mobile station examines the stored values of the configuration message sequence numbers to determine whether the configuration parameters stored by the mobile station are current.

The field EXT_SYS_PARAMETER in the *System Parameters Message*, when set equal to '0', indicates that the base station is not sending the *Extended System Parameters Message*.

1 When the mobile station receives the *System Parameters Message* with the
2 EXT_SYS_PARAMETER field set equal to '0', the mobile station shall set
3 EXT_SYS_PAR_MSG_SEQ_s to CONFIG_MSG_SEQ_s to indicate that the *Extended System*
4 *Parameters Message* is current.

5 The field GEN_NGBR_LST in the *System Parameters Message*, when set equal to '0',
6 indicates that the base station is not sending the *General Neighbor List Message*. When the
7 mobile station receives the *System Parameters Message* with the GEN_NGBR_LST field set
8 equal to '0', the mobile station shall set the GEN_NGBR_LST_MSG_SEQ_s to
9 CONFIG_MSG_SEQ_s to indicate that the *General Neighbor List Message* is current.

10 The field EXT_NGBR_LST in the *System Parameters Message*, when set equal to '0',
11 indicates that the base station is not sending the *Extended Neighbor List Message*. When
12 the mobile station receives the *System Parameters Message* with the EXT_NGBR_LST field
13 set equal to '0', the mobile station shall set EXT_NGBR_LST_SEQ_s to CONFIG_MSG_SEQ_s
14 to indicate that the *Extended Neighbor List Message* is current.

15 The field GLOBAL_REDIRECT in the *System Parameters Message*, when set equal to '0',
16 indicates that the base station is not sending the *Global Service Redirection Message*. When
17 the mobile station receives the *System Parameters Message* with the GLOBAL_REDIRECT
18 field set equal to '0', the mobile station shall set GLOB_SERV_REDIR_MSG_SEQ_s to
19 CONFIG_MSG_SEQ_s to indicate that the *Global Service Redirection Message* is current.

20 The configuration message sequence number is also included in the *General Page Message*.
21 This allows the mobile station to determine whether the stored configuration parameters
22 are current without waiting for a configuration message.

23 *Access Parameters Messages* are independently sequence-numbered by the ACC_MSG_SEQ
24 field. The mobile station stores the most recently received *Access Parameters Message*
25 sequence number (ACC_MSG_SEQ_s).

26 Paging Channels shall be considered different if they are transmitted by different base
27 stations, if they are transmitted on different code channels, or if they are transmitted on
28 different CDMA Channels. Configuration and access parameters from one Paging Channel
29 shall not be used while monitoring a different Paging Channel except for registration and
30 authentication parameters while the mobile station is performing an access probe handoff
31 or access handoff. The mobile station shall ignore any overhead message whose PILOT_PN_r
32 field is not equal to the pilot offset index (PILOT_PN_s) of the base station whose Paging
33 Channel is being monitored.

34 The mobile station may store the configuration parameters from Paging Channels it has
35 recently monitored. When a mobile station starts monitoring a Paging Channel that it has
36 recently monitored, the mobile station can determine whether the stored parameters are
37 current by examining the CONFIG_MSG_SEQ_s in a configuration message or a *General*
38 *Page Message*.

39 The mobile station shall use a special value, NULL, to be stored in place of sequence
40 numbers for messages that have not been received or are marked as not current. The
41 special value NULL shall be unequal to any valid message sequence number.

The mobile station shall consider the stored configuration parameters to be current only if all of the following conditions are true:

- All stored configuration message sequence numbers (SYS_PAR_MSG_SEQ_s, NGHBR_LIST_MSG_SEQ_s, EXT_NGHR_LIST_MSG_SEQ_s, CHAN_LIST_MSG_SEQ_s, EXT_SYS_PAR_MSG_SEQ_s, GEN_NGHR_LIST_MSG_SEQ_s and GLOB_SERV_REDIRECT_MSG_SEQ_s) are equal to CONFIG_MSG_SEQ_s; and
- CONFIG_MSG_SEQ_s is not equal to NULL; and
- No more than T_{31m} seconds (see Annex D) have elapsed since the mobile station last received a valid message on the Paging Channel for which the parameters were stored.

If the configuration parameters are not current, the mobile station shall process the stored parameters upon receipt of the configuration messages as described in 6.6.2.2.1, 6.6.2.2.3, 6.6.2.2.4, 6.6.2.2.5, 6.6.2.2.6, 6.6.2.2.7, and 6.6.2.2.8.

6.6.2.2.1 System Parameters Message

Whenever a *System Parameters Message* is received on the Paging Channel, the configuration message sequence number, CONFIG_MSG_SEQ_r, shall be compared to that stored in SYS_PAR_MSG_SEQ_s. If the comparison results in a match, the mobile station may ignore the message. If the comparison results in a mismatch, then the mobile station shall process the remaining fields in the message as described in 6.6.2.2.1.1, 6.6.2.2.1.2, 6.6.2.2.1.3, 6.6.2.2.1.4, 6.6.2.2.1.5, and 6.6.2.2.1.6.

If PAGE_CHAN, REG_PRD, BASE_LAT, BASE_LONG, or PWR_REP_THRESH are not within the valid ranges specified in 7.7.2.3.2.1, then the mobile station shall ignore the *System Parameters Message* that contains them.

If BAND_CLASS is equal to '00001' and if either EXT_SYS_PARAMETERS_r is not equal to '1' or EXT_NGHR_LIST_r is not equal to '1', or both, the mobile station shall ignore the *System Parameters Message* containing these fields.

6.6.2.2.1.1 Stored Parameters

The mobile station shall store the following parameters:

- Configuration message sequence number
(CONFIG_MSG_SEQ_s = CONFIG_MSG_SEQ_r,
SYS_PAR_MSG_SEQ_s = CONFIG_MSG_SEQ_r)
- Base station identification (BASE_ID_s = BASE_ID_r)
- Base station class (BASE_CLASS_s = BASE_CLASS_r)
- Maximum slot cycle index
(MAX_SLOT_CYCLE_INDEX_s = MAX_SLOT_CYCLE_INDEX_r)
- Home registration indicator (HOME_REG_s = HOME_REG_r)
- SID roamer registration indicator (FOR_SID_REG_s = FOR_SID_REG_r)
- NID roamer registration indicator (FOR_NID_REG_s = FOR_NID_REG_r)

- 1 • Power-up registration indicator ($\text{POWER_UP_REG}_S = \text{POWER_UP_REG}_T$)
- 2 • Power-down registration indicator ($\text{POWER_DOWN_REG}_S = \text{POWER_DOWN_REG}_T$)
- 3 • Parameter-change registration indicator ($\text{PARAMETER_REG}_S = \text{PARAMETER_REG}_T$)
- 4 • Search window size for the Active Set and Candidate Set
5 ($\text{SRCH_WIN_A}_S = \text{SRCH_WIN_A}_T$)
- 6 • Search window size for the Neighbor Set ($\text{SRCH_WIN_N}_S = \text{SRCH_WIN_N}_T$)
- 7 • Search window size for the Remaining Set ($\text{SRCH_WIN_R}_S = \text{SRCH_WIN_R}_T$)
- 8 • Maximum age for retention of Neighbor Set members
9 ($\text{NGHBR_MAX_AGE}_S = \text{NGHBR_MAX_AGE}_T$)
- 10 • Power control reporting threshold ($\text{PWR_REP_THRESH}_S = \text{PWR_REP_THRESH}_T$)
- 11 • Power control reporting frame count ($\text{PWR_REP_FRAMES}_S = \text{PWR_REP_FRAMES}_T$)
- 12 • Threshold report mode indicator
13 ($\text{PWR_THRESH_ENABLE}_S = \text{PWR_THRESH_ENABLE}_T$)
- 14 • Periodic report mode indicator ($\text{PWR_PERIOD_ENABLE}_S = \text{PWR_PERIOD_ENABLE}_T$)
- 15 • Power report delay ($\text{PWR_REP_DELAY}_S = \text{PWR_REP_DELAY}_T$)
- 16 • Pilot detection threshold ($\text{T_ADD}_S = \text{T_ADD}_T$)
- 17 • Pilot drop threshold ($\text{T_DROP}_S = \text{T_DROP}_T$)
- 18 • Active Set versus Candidate Set comparison threshold ($\text{T_COMP}_S = \text{T_COMP}_T$)
- 19 • Drop timer value ($\text{T_TDROP}_S = \text{T_TDROP}_T$)
- 20 • *Extended System Parameters Message sent*
21 ($\text{EXT_SYS_PARAMETER}_S = \text{EXT_SYS_PARAMETER}_T$)
- 22 • *Global Service Redirection Message sent*
23 ($\text{GLOBAL_REDIRECT}_S = \text{GLOBAL_REDIRECT}_T$)
- 24 • *Extended Neighbor List Message sent*
25 ($\text{EXT_NGHBR_LST}_S = \text{EXT_NGHBR_LST}_T$)
- 26 • *General Neighbor List Message sent*
27 ($\text{GEN_NGHBR_LST}_S = \text{GEN_NGHBR_LST}_T$)

28 The mobile station shall also store the following parameters if the mobile station is not in
29 the *Origination Attempt Substate* or *Page Response Substate*:

- 30 • System identification ($\text{SID}_S = \text{SID}_T$)
- 31 • Network identification ($\text{NID}_S = \text{NID}_T$)
- 32 • Registration zone ($\text{REG_ZONE}_S = \text{REG_ZONE}_T$)
- 33 • Number of registration zones to be retained ($\text{TOTAL_ZONES}_S = \text{TOTAL_ZONES}_T$)
- 34 • Zone timer length ($\text{ZONE_TIMER}_S = \text{ZONE_TIMER}_T$)
- 35 • Multiple SID storage indicator ($\text{MULT_SIDS}_S = \text{MULT_SIDS}_T$)

- 1 • Multiple NID storage indicator ($MULT_NIDS_S = MULT_NIDS_T$)
- 2 • Registration period ($REG_PRD_S = REG_PRD_T$)
- 3 • Base station latitude ($BASE_LAT_S = BASE_LAT_T$)
- 4 • Base station longitude ($BASE_LONG_S = BASE_LONG_T$)
- 5 • Registration distance ($REG_DIST_S = REG_DIST_T$)

6 If $EXT_SYS_PARAMETER_S$ is equal to '0', then the mobile station shall perform the
7 following:

- 8 • Set $EXT_SYS_PAR_MSG_SEQ_S$ to $CONFIG_MSG_SEQ_S$.
- 9 • Set $BCAST_INDEX_S$ to $MAX_SLOT_CYCLE_INDEX_S$.
- 10 • Set $IMSI_O$ to $IMSI_M$ by setting $IMSI_O_S1$ to $IMSI_M_S1$ (i.e., setting $IMSI_O_S1_S$
11 to $IMSI_M_S1_P$ and $IMSI_O_S2_S$ to $IMSI_M_S2_P$), MCC_O_S to MCC_M_P ,
12 $IMSI_O_11_12_S$ to $IMSI_M_11_12_P$, and $IMSI_O_ADDR_NUM_S$ to
13 $IMSI_M_ADDR_NUM_P$.
- 14 • Set $RESELECT_INCLUDED_S$ to '0'.
- 15 • Set P_REV_S to '00000011' for Band Class 0 or P_REV_S to '00000001' for Band Class
16 1, and
- 17 • Set $P_REV_IN_USE_S$ to the lesser value of P_REV_S and $MOB_P_REV_P$ of the current
18 band class.

19 If $GLOBAL_REDIRECT_S$ is equal to '0', then the mobile station shall set $GLOB_SERV_REDIR_MSG_SEQ_S$ to $CONFIG_MSG_SEQ_S$.

21 If $EXT_NGHBR_LST_S$ is equal to '0', then the mobile station shall set
22 $EXT_NGHBR_LST_MSG_SEQ_S$ to $CONFIG_MSG_SEQ_S$.

23 If $GEN_NGHBR_LST_S$ is equal to '0', then the mobile station shall perform the following:

- 24 • Set $GEN_NGHBR_LST_MSG_SEQ_S$ to $CONFIG_MSG_SEQ_S$.
- 25 • Set the $SRCH_WIN_NGHBR$ field of $NGHBR_REC$ to $SRCH_WIN_N_S$ for all entries.
- 26 • Set the $TIMING_INCL$ field of $NGHBR_REC$ to '0' for all entries.
- 27 • Set $NUM_ANALOG_NGHBR_S$ to '000' and $ANALOG_NGHBR_LIST$ to NULL.
- 28 • If $EXT_NGHBR_LST_S$ is equal to '0':
 - 29 – Set the $SEARCH_PRIORITY$ field of the $NGHBR_REC$ to '10' (high) for all entries.
 - 30 – Set the $NGHBR_BAND$ field of the $NGHBR_REC$ to $CDMABAND_S$ for all entries.
 - 31 – Set the $NGHBR_FREQ$ field of the $NGHBR_REC$ to $CDMACH_S$ for all entries.

32 If $GEN_NGHBR_LST_S$ is equal to '1', $GEN_NGHBR_LST_MSG_SEQ_S$ is equal to
33 $CONFIG_MSG_SEQ_S$, and $SETTING_SEARCH_WIN$ is equal to '1', the mobile station shall
34 perform the following:

- 35 • Set the $SRCH_WIN_NGHBR$ field of each $NGHBR_REC$ to $SEARCH_WIN_N_S$ for all
36 $NGHBR_SET_SIZE_S$ entries.

- Set SETTING_SEARCH_WIN to '0'.

The mobile station shall ignore any fields at the end of the *System Parameters Message* which are not defined according to the protocol revision level (MOB_P_REV_p of the current band class) being used by the mobile station.

6.6.2.2.1.2 Paging Channel Assignment Change

If the number of Paging Channels specified in the *System Parameters Message* (PAGE_CHAN_r) is different from PAGE_CHAN_s, the mobile station shall use the hash algorithm specified in 6.6.7.1 to select a new Paging Channel number in the range 1 to PAGE_CHAN_r. The mobile station shall store the new Paging Channel number as PAGECH_s. The mobile station shall then set PAGE_CHAN_s to PAGE_CHAN_r. The mobile station shall set ACC_MSG_SEQ_s to NULL. If the mobile station has not stored configuration parameters for the new Paging Channel, or if the stored parameters are not current (see 6.6.2.2), the mobile station shall set CONFIG_MSG_SEQ_s, SYS_PAR_MSG_SEQ_s, NGHBR_LST_MSG_SEQ_s, EXT_NGHBR_LST_MSG_SEQ_s, GEN_NGHBR_LST_MSG_SEQ_s, CHAN_LST_MSG_SEQ_s, EXT_SYS_PAR_MSG_SEQ_s, and GLOB_SERV_REDIR_MSG_SEQ_s to NULL. The mobile station shall then begin monitoring the new Paging Channel as specified in 6.6.2.1.1.

6.6.2.2.1.3 RESCAN Parameter

If the RESCAN_r field in the *System Parameters Message* equals '1', the mobile station shall enter the *System Determination Substate* of the *Mobile Station Initialization State* with a rescan indication (see 6.6.1.1).

6.6.2.2.1.4 Roaming Status

The mobile station shall determine the roaming status for the mobile station (see 6.6.5.3). The mobile station should indicate to the user whether the mobile station is roaming.

6.6.2.2.1.5 Registration

The mobile station shall update stored variables and perform other registration procedures as specified in 6.6.5.5.2.2.

6.6.2.2.1.6 Slot Cycle Index

The mobile station shall set SLOT_CYCLE_INDEX_s to the smaller of: the preferred slot cycle index SLOT_CYCLE_INDEX_p and the maximum slot cycle index MAX_SLOT_CYCLE_INDEX_s. If the mobile station is operating in the slotted mode, it shall set its slot cycle length as described in 6.6.2.1.1.3.

6.6.2.2.1.7 PACA Disable for SID Change

If PACA_s is equal to enabled, and SID_s is not equal to PACA_SID_s, the mobile station shall set PACA_s to disabled and PACA_CANCEL to '0', shall disable the PACA state timer, and should indicate to the user that the PACA call has been canceled.

6.6.2.2.2 Access Parameters Message

Whenever an *Access Parameters Message* is received on the Paging Channel, the sequence number, $ACC_MSG_SEQ_r$, shall be compared to $ACC_MSG_SEQ_s$. If the comparison results in a match, the mobile station may ignore the message. If the comparison results in a mismatch, then the mobile station shall process the remaining fields in the message as follows.

If $PROBE_PN_RAN$, MAX_REQ_SEQ , or MAX_RSP_SEQ are not within the valid ranges specified in 7.7.2.3.2.2, then the mobile station shall ignore the *Access Parameters Message* that contains them.

The mobile station shall store the following parameters:

- *Access Parameters Message* sequence number ($ACC_MSG_SEQ_s = ACC_MSG_SEQ_r$)
- Number of Access Channels ($ACC_CHAN_s = ACC_CHAN_r$)
- Nominal transmit power offset ($NOM_PWR_s = NOM_PWR_r$)
- Initial power offset for access ($INIT_PWR_s = INIT_PWR_r$)
- Power increment ($PWR_STEP_s = PWR_STEP_r$)
- Number of access probes ($NUM_STEP_s = NUM_STEP_r$)
- Maximum Access Channel message capsule size ($MAX_CAP_SZ_s = MAX_CAP_SZ_r$)
- Access Channel preamble length ($PAM_SZ_s = PAM_SZ_r$)
- Persistence modifier for Access Channel attempts for registrations which are not responses to the *Registration Request Order* ($REG_PSIST_s = REG_PSIST_r$)
- Persistence modifier for Access Channel attempts for message transmissions ($MSG_PSIST_s = MSG_PSIST_r$)
- Time randomization for Access Channel probes ($PROBE_PN_RAN_s = PROBE_PN_RAN_r$)
- Acknowledgment timeout ($ACC_TMO_s = ACC_TMO_r$)
- Access Channel probe backoff range ($PROBE_BKOFF_s = PROBE_BKOFF_r$)
- Access Channel probe sequence backoff range ($BKOFF_s = BKOFF_r$)
- Maximum number of probe sequences for an Access Channel request ($MAX_REQ_SEQ_s = MAX_REQ_SEQ_r$)
- Maximum number of probe sequences for an Access Channel response ($MAX_RSP_SEQ_s = MAX_RSP_SEQ_r$)
- If $CDMABAND_s$ is equal to '0', the mobile station shall set extended nominal transmit power $NOM_PWR_EXT_s$ to '0'; otherwise, the mobile station shall store extended nominal transmit power ($NOM_PWR_EXT_s = NOM_PWR_EXT_r$).

The mobile station shall also store the following parameters if the mobile station is not in the *Origination Attempt Substate* or *Page Response Substate*:

- 1 • Authentication mode (if $AUTH_r$ is equal to '00' or '01', then $AUTH_s = AUTH_r$;
2 otherwise $AUTH_s = '01'$)
- 3 • Random challenge value ($RAND_s = RAND_r$)

4 The mobile station shall ignore any fields at the end of the *Access Parameters Message*
5 which are not defined according to the protocol revision level ($MOB_P_REV_p$ of the current
6 band class) being used by the mobile station.

7 The mobile station shall store the persistence parameter number according to the following
8 rule: If the mobile station's access overload class is in the range 0-9, set $PSIST_s$ equal to
9 $PSIST(0-9)_r$; otherwise set $PSIST_s$ equal to $PSIST(n)_r$, where n is equal to the mobile station
10 access overload class.

11 The mobile station shall set $CURR_ACC_MSG_SEQ$ to $ACC_MSG_SEQ_s$.

12 6.6.2.2.3 Neighbor List Message

13 Whenever a valid *Neighbor List Message* is received on the current Paging Channel
14 ($PAGECH_s$), the configuration message sequence number, $CONFIG_MSG_SEQ_r$, shall be
15 compared to that stored in $NGHBR_LST_MSG_SEQ_s$. If the comparison results in a match,
16 the mobile station shall ignore the message. If the comparison results in a mismatch, then
17 the mobile station shall process the remaining fields in the message as follows.

18 If the $PILOT_INC$ field is not within the valid range specified in 7.7.2.3.2.3, then the mobile
19 station shall ignore the *Neighbor List Message* that contains it.

20 The mobile station shall store the following parameters:

- 21 • Configuration message sequence number
22 ($CONFIG_MSG_SEQ_s = CONFIG_MSG_SEQ_r$,
23 $NGHBR_LST_MSG_SEQ_s = CONFIG_MSG_SEQ_r$)
- 24 • Pilot PN sequence offset increment ($PILOT_INC_s = PILOT_INC_r$)

25 The mobile station shall set $NGHBR_SET_SIZE_s$ to the number of neighboring base stations
26 contained in the *Neighbor List Message*.

27 For each of the neighboring base stations contained in the *Neighbor List Message*, the
28 mobile station shall do the following:

- 29 • If the i^{th} occurrence of $NGHBR_CONFIG_r$ is equal to '000', '001', or '010', set the
30 $NGHBR_CONFIG$ field of $NGHBR_REC[i]$ to the i^{th} occurrence of $NGHBR_CONFIG_r$;
31 otherwise, set the $NGHBR_CONFIG$ field of $NGHBR_REC[i]$ to '011'.
- 32 • Set the $NGHBR_PN$ field of $NGHBR_REC[i]$ to the i^{th} occurrence of $NGHBR_PN_r$.

33 If $GEN_NGHBR_LST_MSG_SEQ_s$ is not equal to $CONFIG_MSG_SEQ_s$, the mobile station
34 shall perform the following:

- 35 • Set the $SEARCH_PRIORITY$ field of the $NGHBR_REC$ to '10' (high) for all
36 $NGHBR_SET_SIZE_s$ entries.
- 37 • Set the $NGHBR_BAND$ field of $NGHBR_REC$ to $CDMABAND_s$ for all
38 $NGHBR_SET_SIZE_s$ entries.

- 1 • Set the NGHBR_FREQ field of NGHBR_REC to CDMACH_S for all NGHBR_SET_SIZE_S
- 2 entries.
- 3 • Set the SRCH_WIN_NGHBR field of NGHBR_REC to SRCH_WIN_N_S for all
- 4 NGHBR_SET_SIZE_S entries.
- 5 • Set NUM_ANALOG_NGHBR_S to '000' and set ANALOG_NGHBR_LIST to NULL.

6 The mobile station shall set the ACCESS_ENTRY_HO field of the NGHBR_REC to '0' for all
7 NGHBR_SET_SIZE_S entries if any of the following conditions are met:

- 8 • EXT_SYS_PARAMETER_S is equal to '0',
- 9 • NGHBR_SET_ENTRY_INFO_S is equal to '0', or
- 10 • EXT_SYS_PAR_MSG_SEQ_S is not equal to CONFIG_MSG_SEQ_S.

11 The mobile station shall set the ACCESS_HO_ALLOWED field of the NGHBR_REC to '0' for
12 all NGHBR_SET_SIZE_S entries if any of the following conditions are met:

- 13 • EXT_SYS_PARAMETER_S is equal to '0',
- 14 • NGHBR_SET_ACCESS_INFO_S is equal to '0', or
- 15 • EXT_SYS_PAR_MSG_SEQ_S is not equal to CONFIG_MSG_SEQ_S.

16 The mobile station shall update the idle handoff Neighbor Set (see 6.6.2.1.4) so that it
17 consists only of pilot offsets listed in the *Neighbor List Message*. If the *Neighbor List*
18 *Message* contains more pilot offsets than the mobile station can store, the mobile station
19 shall store the pilot offsets beginning at the start of the *Neighbor List Message*, up to the
20 limits of the mobile station's Neighbor Set storage capacity.

21 6.6.2.2.4 CDMA Channel List Message

22 Whenever a *CDMA Channel List Message* is received on the Paging Channel, the
23 configuration message sequence number, CONFIG_MSG_SEQ_r, shall be compared to that
24 stored in CHAN_LST_MSG_SEQ_S. If the comparison results in a match, the mobile station
25 may ignore the message. If the comparison results in a mismatch, then the mobile station
26 shall process the remaining fields in the message as follows.

27 The mobile station shall store the following parameters:

- 28 • Configuration message sequence number
- 29 (CONFIG_MSG_SEQ_S = CONFIG_MSG_SEQ_r,
- 30 CHAN_LST_MSG_SEQ_S = CONFIG_MSG_SEQ_r)

31 The mobile station shall use the hash algorithm specified in 6.6.7.1 and the number of
32 channels listed in the *CDMA Channel List Message* to determine the CDMA Channel
33 (frequency assignment) for its Paging Channel. If the CDMA frequency assignment has
34 changed (the computed CDMA Channel is different from CDMACH_S), the mobile station
35 shall perform the following actions:

- 36 • Set CDMACH_S to the new CDMA Channel.
- 37 • Set PAGE_CHAN_S to '1'.

- 1 • Set PAGECH_s to the Primary Paging Channel.
- 2 • Set CONFIG_MSG_SEQ_s, SYS_PAR_MSG_SEQ_s, NGHBR_LST_MSG_SEQ_s,
3 CHAN_LST_MSG_SEQ_s, EXT_NGHBR_LST_MSG_SEQ_s,
4 GEN_NGHBR_LST_MSG_SEQ_s, EXT_SYS_PAR_MSG_SEQ_s,
5 GLOB_SERV_REDIR_MSG_SEQ_s, and ACC_MSG_SEQ_s to NULL.
- 6 • Tune to the new CDMA Channel.

7 6.6.2.2.5 Extended System Parameters Message

8 Whenever an *Extended System Parameters Message* is received on the Paging Channel, the
9 configuration message sequence number, CONFIG_MSG_SEQ_r, shall be compared to that
10 stored in EXT_SYS_PAR_MSG_SEQ_s. If the comparison results in a match, the mobile
11 station may ignore the message. If the comparison results in a mismatch, then the mobile
12 station shall process the remaining fields in the message as follows.

13 If the protocol revision level supported by mobile station (MOB_P_REV_p) is less than the
14 minimum protocol revision level supported by the base station (MIN_P_REV_r), the mobile
15 station shall enter the *System Determination Substate* of the *Mobile Station Initialization*
16 *State* with a protocol mismatch indication (see 6.6.1.1). Otherwise, the mobile station shall
17 store the following parameters:

- 18 • Configuration message sequence number
19 (CONFIG_MSG_SEQ_s = CONFIG_MSG_SEQ_r,
20 EXT_SYS_PAR_MSG_SEQ_s = CONFIG_MSG_SEQ_r)
- 21 • Preferred Access Channel MSID Type (PREF_MSID_TYPE_s = PREF_MSID_TYPE_r)
- 22 • Broadcast slot cycle index (BCAST_INDEX_s = BCAST_INDEX_r)
- 23 • The mobile station shall set its operational IMSI, IMSI_O, as follows:
 - 24 – If IMSI_T_SUPPORTED_r is equal to '0', the mobile station shall set IMSI_O to
25 IMSI_{Mp}.
 - 26 – If IMSI_T_SUPPORTED_r is equal to '1' and the mobile station's IMSI_{Tp} has been
27 programmed, the mobile station shall set IMSI_O to IMSI_{Tp}.
 - 28 – If IMSI_T_SUPPORTED_r is equal to '1' and the mobile station's IMSI_{Tp} has not
29 been programmed, the mobile station shall set IMSI_O to IMSI_{Mp}.
 - 30 – If IMSI_O has been changed, the mobile station shall set SYS_PAR_MSG_SEQ_s
31 and CHAN_LST_MSG_SEQ_s to NULL and set PAGE_CHAN_s to '001'.
- 32 • If MCC_r = '111111111' and IMSI_{11_12r} = '1111111', the mobile station shall set
33 the IMSI_O to IMSI_{Mp} and store:
 - 34 – Mobile Country Code (MCC_s = MCC_{Mp}) and
 - 35 – IMSI 11th and 12th digits (IMSI_{11_12s} = IMSI_{M_11_12p});
- 36 otherwise, the mobile station shall store:
 - 37 – Mobile Country Code (MCC_s = MCC_r) and

- 1 - IMSI 11th and 12th digits ($\text{IMSI}_{11_12_s} = \text{IMSI}_{11_12_r}$).
- 2 • If IMSI_O is set to the IMSI_M , the mobile station shall set:
 - 3 - $\text{IMSI}_O_{S_s}$ to $\text{IMSI}_M_{S_p}$ (i.e., $\text{IMSI}_O_{S1_s}$ to $\text{IMSI}_M_{S1_p}$ and $\text{IMSI}_O_{S2_s}$ to
 - 4 $\text{IMSI}_M_{S2_p}$)
 - 5 - $\text{IMSI}_O_{11_12_s}$ to $\text{IMSI}_M_{11_12_p}$
 - 6 - MCC_O_s to MCC_M_p
 - 7 - $\text{IMSI}_O_{\text{ADDR_NUM}_s}$ to $\text{IMSI}_M_{\text{ADDR_NUM}_p}$
- 8 • If IMSI_O is set to the IMSI_T , the mobile station shall set:
 - 9 - $\text{IMSI}_O_{S_s}$ to $\text{IMSI}_T_{S_p}$ (i.e., $\text{IMSI}_O_{S1_s}$ to $\text{IMSI}_T_{S1_p}$ and $\text{IMSI}_O_{S2_s}$ to
 - 10 $\text{IMSI}_T_{S2_p}$).
 - 11 - $\text{IMSI}_O_{11_12_s}$ to $\text{IMSI}_T_{11_12_p}$
 - 12 - MCC_O_s to MCC_T_p
 - 13 - $\text{IMSI}_O_{\text{ADDR_NUM}_s}$ to $\text{IMSI}_T_{\text{ADDR_NUM}_p}$
- 14 • Protocol revision level ($\text{P_REV}_s = \text{P_REV}_r$) if included in the message; otherwise,
- 15 $\text{P_REV}_s = '00000011'$ for Band Class 0 and $\text{P_REV}_s = '00000001'$ for Band Class 1.
- 16 • Minimum protocol revision level ($\text{MIN_P_REV}_s = \text{MIN_P_REV}_r$) if included in the
- 17 message; otherwise, $\text{MIN_P_REV}_s = '00000010'$ for Band Class 0 and $\text{MIN_P_REV}_s =$
- 18 $'00000001'$ for Band Class 1.
- 19 • Protocol revision level currently in use ($\text{P_REV_IN_USE}_s =$ the lesser value of P_REV_s
- 20 and MOB_P_REV_p of the current band class)
- 21 • Slope of the handoff add/drop criterion ($\text{SOFT_SLOPE}_s = \text{SOFT_SLOPE}_r$) if included
- 22 in the message; otherwise, $\text{SOFT_SLOPE}_s = '000000'$.
- 23 • Intercept of the handoff add criterion ($\text{ADD_INTERCEPT}_s = \text{ADD_INTERCEPT}_r$)
- 24 • Intercept of the handoff drop criterion ($\text{DROP_INTERCEPT}_s = \text{DROP_INTERCEPT}_r$)
- 25 • Delete foreign TMSI ($\text{DELETE_FOR_TMSI}_s = \text{DELETE_FOR_TMSI}_r$)
- 26 • Use TMSI ($\text{USE_TMSI}_s = \text{USE_TMSI}_r$)
- 27 • TMSI zone length ($\text{TMSI_ZONE_LEN}_s = \text{TMSI_ZONE_LEN}_r$)
- 28 • TMSI zone number ($\text{TMSI_ZONE}_s = \text{TMSI_ZONE}_r$)
- 29 • Maximum number of alternative service options ($\text{MAX_NUM_ALT_SO}_s =$
- 30 MAX_NUM_ALT_SO_r) if included in the message; otherwise, $\text{MAX_NUM_ALT_SO}_s =$
- 31 $'000'$.
- 32 • System reselection indicator ($\text{RESELECT_INCLUDED}_s = \text{RESELECT_INCLUDED}_r$) if
- 33 included in the message; otherwise, $\text{RESELECT_INCLUDED}_s = '0'$.
- 34 • Pilot reporting indicator ($\text{PILOT_REPORT}_s = \text{PILOT_REPORT}_r$)

- 1 • Neighbor Set access entry handoff information indicator
2 (NGHBR_SET_ENTRY_INFO_s = NGHBR_SET_ENTRY_INFO_r) if included in the
3 message; otherwise, NGHBR_SET_ENTRY_INFO_s = '0'.
- 4 • Neighbor Set access handoff information indicator (NGHBR_SET_ACCESS_INFO_s =
5 NGHBR_SET_ACCESS_INFO_r) if included in the message; otherwise,
6 NGHBR_SET_ACCESS_INFO_s = '0'.

7 If P_REV_IN_USE_s has been changed, the mobile station shall set ACC_MSG_SEQ_s,
8 CURR_ACC_MSG_SEQ, SYS_PAR_MSG_SEQ_s, EXT_NGHBR_LST_MSG_SEQ_s,
9 GEN_NGHBR_LST_MSG_SEQ_s, and GLOB_SERV_REDIR_MSG_SEQ_s to NULL.

10 If NGHBR_SET_ENTRY_INFO is equal to '1', the mobile station shall store the access entry
11 handoff in order and message processing operation indicator (ACC_ENT_HO_ORDER_s =
12 ACC_ENT_HO_ORDER_r).

13 If the mobile station supports packet data service options and PACKET_ZONE_ID is
14 included in the message, the mobile station shall store the packet data services zone
15 identifier (PACKET_ZONE_ID_s = PACKET_ZONE_ID_r); otherwise, the mobile station shall set
16 PACKET_ZONE_ID_s to '00000000'.

17 If RESELECT_INCLUDED_s is equal to '1', the mobile station shall store:

- 18 • Pilot power threshold (EC_THRESH_s = EC_THRESH_r)
- 19 • Pilot E_c/I₀ threshold (EC_IO_THRESH_s = EC_IO_THRESH_r)

20 If NGHBR_SET_ACCESS_INFO_s is equal to '1', the mobile station shall store:

- 21 • Access handoff permitted indicator (ACCESS_HO_s = ACCESS_HO_r)
- 22 • Access probe handoff permitted indicator (ACCESS_PROBE_HO_s =
23 ACCESS_PROBE_HO_r)
- 24 • If ACCESS_PROBE_HO_s is equal to '1', access handoff list update permitted
25 indicator (ACC_HO_LIST_UPD_s = ACC_HO_LIST_UPD_r)
- 26 • Maximum number of times that the mobile station is permitted to perform an access
27 probe handoff (MAX_NUM_PROBE_HO_s = MAX_NUM_PROBE_HO_r)
- 28 • Access handoff permitted for message response indicator (ACCESS_HO_MSG_RSP_s
29 = ACCESS_HO_MSG_RSP_r)
- 30 • Access probe handoff permitted for other messages indicator
31 (ACC_PROBE_HO_OTHER_MSG_s = ACC_PROBE_HO_OTHER_MSG_r)

32 If NGHBR_SET_ENTRY_INFO_s or NGHBR_SET_ACCESS_INFO_s is equal to '1', the mobile
33 station shall store the size of the Neighbor Set (NGHBR_SET_SIZE_s = NGHBR_SET_SIZE_r).

34 If NGHBR_SET_ENTRY_INFO_s is equal to '0', then for all NGHBR_SET_SIZE_s occurrences of
35 ACCESS_ENTRY_HO, the mobile station shall set the ACCESS_ENTRY_HO field of
36 NGHBR_REC[i] to '0'.

37 If NGHBR_SET_ENTRY_INFO_s is equal to '1', then for all NGHBR_SET_SIZE_s occurrences of
38 ACCESS_ENTRY_HO, the mobile station shall set the ACCESS_ENTRY_HO field of
39 NGHBR_REC[i] to the ith occurrence of ACCESS_ENTRY_HO_r.

1 If NGHBR_SET_ACCESS_INFO_s is equal to '0', then for all NGHBR_SET_SIZE_s occurrences
 2 of ACCESS_HO_ALLOWED, the mobile station shall set the ACCESS_HO_ALLOWED field of
 3 NGHBR_REC[i] to '0'.

4 If NGHBR_SET_ACCESS_INFO_s is equal to '1', then for all NGHBR_SET_SIZE_s occurrences
 5 of ACCESS_HO_ALLOWED, the mobile station shall set the ACCESS_HO_ALLOWED field of
 6 NGHBR_REC[i] to the ith occurrence of ACCESS_HO_ALLOWED_r.

7 The mobile station shall set all bits of TMSI_CODE_{s-p} to '1' if all of the following conditions
 8 are met:

- 9 • The bits of TMSI_CODE_{s-p} are not all equal to '1',
- 10 • DELETE_FOR_TMSI_s is equal to '1', and
- 11 • ASSIGNING_TMSI_ZONE_LEN_{s-p} is not equal to TMSI_ZONE_LEN_s, or the least
 12 significant ASSIGNING_TMSI_ZONE_LEN_{s-p} octets of ASSIGNING_TMSI_ZONE_{s-p}
 13 are not equal to TMSI_ZONE_s.

14 6.6.2.2.6 Global Service Redirection Message

15 Whenever a *Global Service Redirection Message* is received on the Paging Channel, the
 16 configuration message sequence number, CONFIG_MSG_SEQ_r, shall be compared to that
 17 stored in GLOB_SERV_REDIR_MSG_SEQ_s. If the comparison results in a match, the
 18 mobile station may ignore the message. If the comparison results in a mismatch, the
 19 mobile station shall store the following parameters:

- 20 • Configuration message sequence number
 21 (CONFIG_MSG_SEQ_s = CONFIG_MSG_SEQ_r,
 22 GLOB_SERV_REDIR_MSG_SEQ_s = CONFIG_MSG_SEQ_r)
- 23 • If DELETE_TMSI_r is equal to '1', the mobile station shall set all the bits of
 24 TMSI_CODE_{s-p} to '1'.
- 25 • Set CDMA_MODE_s to 1
- 26 • Set DIGITAL_REG_{s-p} to '00000000'
- 27 • Max delay upon redirection (MAX_REDIRECT_DELAY_s = MAX_REDIRECT_DELAY_r)

28 If the subfield corresponding to the access overload class, ACCOLC_p, of the mobile station
 29 is set equal to '1' in the REDIRECT_ACCOLC_r field of the received message, the mobile
 30 station shall store the following parameters and then shall enter the *System Determination*
 31 *Substate of the Mobile Station Initialization State* with a redirection indication (see 6.6.1.1):

- 32 • Return if fail indicator (RETURN_IF_FAIL_s = RETURN_IF_FAIL_r)
- 33 • Redirection record (REDIRECT_REC_s = redirection record from received message)

34 6.6.2.2.7 Extended Neighbor List Message

35 Whenever a valid *Extended Neighbor List Message* is received on the current Paging
 36 Channel (PAGECH_s), the configuration message sequence number, CONFIG_MSG_SEQ_r,
 37 shall be compared to that stored in EXT_NGHRBR_LST_MSG_SEQ_s. If the comparison
 38 results in a match, the mobile station may ignore the message. If the comparison results in

a mismatch, then the mobile station shall process the remaining fields in the message as follows.

If the PILOT_INC field is not within the valid range specified in 7.7.2.3.2.3, then the mobile station shall ignore the *Extended Neighbor List Message* that contains it.

The mobile station shall store the following parameters:

- Configuration message sequence number
(CONFIG_MSG_SEQ_s = CONFIG_MSG_SEQ_r,
EXT_NGHRBR_LST_MSG_SEQ_s = CONFIG_MSG_SEQ_r,
NGHRBR_LST_MSG_SEQ_s = CONFIG_MSG_SEQ_r)
- Pilot PN sequence offset increment (PILOT_INC_s = PILOT_INC_r)

The mobile station shall set NGHRBR_SET_SIZE_s to the number of neighboring base stations contained in the *Extended Neighbor List Message*.

For each of the neighboring base stations contained in the *Extended Neighbor List Message*, if FREQ_INCL_r equals '0', or if FREQ_INCL_r equals '1' and NGHRBR_BAND_r is supported, the mobile station shall do the following:

- If the *i*th occurrence of NGHRBR_CONFIG_r is equal to '000', '001', or '010', set the NGHRBR_CONFIG field of NGHRBR_REC[i] to the *i*th occurrence of NGHRBR_CONFIG_r; otherwise, set the NGHRBR_CONFIG field of NGHRBR_REC [i] to '011'.
- Set the NGHRBR_PN field of NGHRBR_REC[i] to the *i*th occurrence of NGHRBR_PN_r.
- Set the SEARCH_PRIORITY field of NGHRBR_REC[i] to the *i*th occurrence of SEARCH_PRIORITY_r.

For each of the neighboring base stations contained in the *Extended Neighbor List Message*, if FREQ_INCL_r equals '1' and NGHRBR_BAND_r is supported, the mobile station shall also do the following:

- Set the NGHRBR_BAND field of NGHRBR_REC[i] to the *i*th occurrence of NGHRBR_BAND_r.
- Set the NGHRBR_FREQ field of NGHRBR_REC[i] to the *i*th occurrence of NGHRBR_FREQ_r.

For each of the neighboring base stations contained in the *Extended Neighbor List Message*, if FREQ_INCL_r equals '0', the mobile station shall also do the following:

- Set the NGHRBR_BAND field of NGHRBR_REC[i] to CDMABAND_s.
- Set the NGHRBR_FREQ field of NGHRBR_REC[i] to CDMACH_s.

If GEN_NGHRBR_LST_MSG_SEQ_s is not equal to CONFIG_MSG_SEQ_s, the mobile station shall do the following:

- Set the SRCH_WIN_NGHRBR field of NGHRBR_REC to SRCH_WIN_N_s for all NGHRBR_SET_SIZE_s entries.
- Set NUM_ANALOG_NGHRBR_s to '000' and set ANALOG_NGHRBR_LIST to NULL.

1 The mobile station shall set the ACCESS_ENTRY_HO field of the NGHBR_REC to '0' for all
2 NGHBR_SET_SIZE_S entries if any of the following conditions are met:

- 3 • EXT_SYS_PARAMETER_S is equal to '0',
- 4 • NGHBR_SET_ENTRY_INFO_S is equal to '0', or
- 5 • EXT_SYS_PAR_MSG_SEQ_S is not equal to CONFIG_MSG_SEQ_S.

6 The mobile station shall set the ACCESS_HO_ALLOWED field of the NGHBR_REC to '0' for
7 all NGHBR_SET_SIZE_S entries if any of the following conditions are met:

- 8 • EXT_SYS_PARAMETER_S is equal to '0',
- 9 • NGHBR_SET_ACCESS_INFO_S is equal to '0', or
- 10 • EXT_SYS_PAR_MSG_SEQ_S is not equal to CONFIG_MSG_SEQ_S.

11 The mobile station shall update the idle handoff Neighbor Set (see 6.6.2.1.4) so that it
12 consists only of pilot offsets listed in the *Extended Neighbor List Message*. If the *Extended*
13 *Neighbor List Message* contains more pilot offsets than the mobile station can store, the
14 mobile station shall store the pilot offsets beginning at the start of the *Extended Neighbor*
15 *List Message*, up to the limits of the mobile station's Neighbor Set storage capacity.

16 6.6.2.2.8 General Neighbor List Message

17 Whenever a valid *General Neighbor List Message* is received on the current Paging Channel
18 (PAGECH_S), the configuration message sequence number, CONFIG_MSG_SEQ_r shall be
19 compared to that stored in GEN_NGHR_LST_MSG_SEQ_S. If the comparison results in a
20 mismatch, then the mobile station shall process the remaining field in the message as
21 follows.

22 If the PILOT_INC field is not within the valid range specified in 7.7.2.3.2.3, then the mobile
23 station shall ignore the *General Neighbor List Message* that contains it.

24 The mobile station shall store the following parameters:

- 25 • Configuration message sequence number
26 (CONFIG_MSG_SEQ_S = CONFIG_MSG_SEQ_r,
27 GEN_NGHR_LST_MSG_SEQ_S = CONFIG_MSG_SEQ_r).
- 28 • Pilot PN sequence offset increment (PILOT_INC_S = PILOT_INC_r).

29 If NGHBR_CONFIG_PN_INCL_r is equal to '1' and FREQ_FIELDS_INCL_r is equal to '1', the
30 mobile station shall store the following parameters:

- 31 • Configuration message sequence number
32 (EXT_NGHR_LST_MSG_SEQ_S = CONFIG_MSG_SEQ_r,
33 NGHBR_LST_MSG_SEQ_S = CONFIG_MSG_SEQ_r).

34 The mobile station shall set NGHBR_SET_SIZE_S to the number of neighboring base stations
35 contained in the *General Neighbor List Message*.

36 For each of the neighboring base stations contained in the *General Neighbor List Message*, if
37 FREQ_INCL_r equal '0', or if FREQ_INCL_r equal '1' and NGHBR_BAND_r is supported, the
38 mobile station shall do the following:

- 1 • If NGHBR_CONFIG_PN_INCL_r is equal to '1', set the NGHBR_CONFIG and
2 NGHBR_PN fields as follows:
 - 3 – If the *i*th occurrence of NGHBR_CONFIG_r is equal to '000', '001', or '010', set the
4 NGHBR_CONFIG field of NGHBR_REC[i] to the *i*th occurrence of
5 NGHBR_CONFIG_r; otherwise, set the NGHBR_CONFIG field of NGHBR_REC[i] to
6 '011'.
 - 7 – Set the NGHBR_PN field of NGHBR_REC[i] to the *i*th occurrence of NGHBR_PN_r.
- 8 • If NGHBR_SRCH_MODE_r = '00' or '10' and EXT_NGHBR_LST_MSG_SEQ_s is not
9 equal to CONFIG_MSG_SEQ_r, set SEARCH_PRIORITY field of each NGHBR_REC to
10 '10' (high) for all NGHBR_SET_SIZE_s entries.
- 11 • If NGHBR_SRCH_MODE_r = '01' or '11', set the SEARCH_PRIORITY field of
12 NGHBR_REC[i] to the *i*th occurrence of SEARCH_PRIORITY_r.
- 13 • If NGHBR_SRCH_MODE_r = '00' or '01', set the SRCH_WIN_NGHBR field of each
14 NGHBR_REC to SEARCH_WIN_s for all NGHBR_SET_SIZE_s entries if
15 SYS_PAR_MSG_SEQ_s is equal to CONFIG_MSG_SEQ_s; otherwise, set
16 SETTING_SEARCH_WIN to '1'.
- 17 • If NGHBR_SRCH_MODE_r = '10' or '11', set the SRCH_WIN_NGHBR field of
18 NGHBR_REC[i] to the *i*th occurrence of SRCH_WIN_NGHBR_r.
- 19 • If USE_TIMING_r is equal to '1', set the TIMING_INCL field of NGHBR_REC[i] to the
20 *i*th occurrence of TIMING_INCL_r; otherwise, set the TIMING_INCL field of
21 NGHBR_REC to '0' for all entries.

22 For each of the neighboring base stations contained in the *General Neighbor List Message*, if
23 FREQ_FIELDS_INCL_r equals '1', FREQ_INCL_r equals '1', and NGHBR_BAND_r is supported,
24 the mobile station shall also perform the following:

- 25 • Set the NGHBR_BAND field of NGHBR_REC[i] to the *i*th occurrence of
26 NGHBR_BAND_r.
- 27 • Set the NGHBR_FREQ field of NGHBR_REC[i] to the *i*th occurrence of
28 NGHBR_FREQ_r.

29 For each of the neighboring base stations contained in the *General Neighbor List Message*, if
30 USE_TIMING_r is equal to '1' and TIMING_INCL_r equals '1', the mobile station shall also
31 perform the following:

- 32 • Set the NGHBR_TX_OFFSET field of NGHBR_REC[i] to the *i*th occurrence of
33 NGHBR_TX_OFFSET_r.
- 34 • If GLOBAL_TIMING_INCL_r is equal to '1', then the mobile station shall:
 - 35 – Set the NGHBR_TX_DURATION field of NGHBR_REC to
36 GLOBAL_TX_DURATION_r for all entries.
 - 37 – Set the NGHBR_TX_PERIOD field of NGHBR_REC to GLOBAL_TX_PERIOD_r for
38 all entries.
- 39 • If GLOBAL_TIMING_INCL_r is equal to '0', then the mobile station shall:

1 - Set the NGHBR_TX_DURATION field of NGHBR_REC[i] to the i^{th} occurrence of
2 NGHBR_TX_DURATION_r.

3 - Set the NGHBR_TX_PERIOD field of NGHBR_REC[i] to the i^{th} occurrence of
4 NGHBR_TX_PERIOD_r.

5 For each of the neighboring base stations contained in the *General Neighbor List Message*, if
6 FREQ_FIELDS_INCL_r equals '1' and FREQ_INCL_r equals '0', or if FREQ_FIELDS_INCL_r
7 equals '0' and EXT_NGHBR_LST_MSG_SEQ_s is not equal to CONFIG_MSG_SEQ_r, the
8 mobile station shall also do the following:

- 9 • Set the NGHBR_BAND field of NGHBR_REC[i] to CDMABAND_s.
- 10 • Set the NGHBR_FREQ field of NGHBR_REC[i] to CDMACH_s.

11 The mobile station shall set the ACCESS_ENTRY_HO field of the NGHBR_REC to '0' for all
12 NGHBR_SET_SIZE_s entries if any of the following conditions are met:

- 13 • EXT_SYS_PARAMETER_s is equal to '0'
- 14 • NGHBR_SET_ENTRY_INFO_s is equal to '0', or
- 15 • EXT_SYS_PAR_MSG_SEQ_s is not equal to CONFIG_MSG_SEQ_s.

16 The mobile station shall set the ACCESS_HO_ALLOWED field of the NGHBR_REC to '0' for
17 all NGHBR_SET_SIZE_s entries if any of the following conditions are met:

- 18 • EXT_SYS_PARAMETER_s is equal to '0'
- 19 • NGHBR_SET_ACCESS_INFO_s is equal to '0', or
- 20 • EXT_SYS_PAR_MSG_SEQ_s is not equal to CONFIG_MSG_SEQ_s.

21 The mobile station shall update the idle handoff Neighbor Set (see 6.6.2.1.4) so that it
22 consists only of pilot offsets listed in the *General Neighbor List Message*. If the *General*
23 *Neighbor List Message* contains more pilot offsets than the mobile station can store, the
24 mobile station shall store the pilot offsets beginning at the start of the *General Neighbor List*
25 *Message*, up to the limits of the mobile station's Neighbor Set storage capacity.

26 The mobile station shall set NUM_ANALOG_NGHBR_s to NUM_ANALOG_NGHBR_r, the
27 number of neighboring analog systems contained in the *General Neighbor List Message*. For
28 each of the neighboring analog systems contained in the *General Neighbor List Message*, the
29 mobile station shall perform the following:

- 30 • Set the BAND_CLASS field of ANALOG_NGHBR_LIST[i] to the i^{th} occurrence of
31 BAND_CLASS_r.
- 32 • Set the SYS_A_B field of ANALOG_NGHBR_LIST[i] to the i^{th} occurrence of SYS_A_B_r.

33 6.6.2.3 Mobile Station Page Match Operation

34 The *Mobile Station Page Match Operation* is performed whenever the mobile station receives
35 a *General Page Message*. The mobile station searches each message to determine whether
36 it contains the IMSI or TMSI assigned to the mobile station. If so, the mobile station
37 transmits a *Page Response Message* on the Access Channel. If configured to receive
38 broadcast messages, the mobile station also searches each *General Page Message* to

determine whether it contains a burst type and broadcast address that the mobile station has been configured to receive. If so, the mobile station performs the broadcast page procedures described in 6.6.2.1.1.3.4.

The mobile station shall compare the configuration message sequence number, CONFIG_MSG_SEQ_r, to CONFIG_MSG_SEQ_s. If the comparison results in a mismatch, then the mobile station shall set CONFIG_MSG_SEQ_s to CONFIG_MSG_SEQ_r. The mobile station shall also compare the *Access Parameters Message* sequence number, ACC_MSG_SEQ_r, with that stored in ACC_MSG_SEQ_s. If the comparison results in a mismatch, then the mobile station shall set ACC_MSG_SEQ_s to NULL (see 6.6.2.2). The mobile station shall set CURR_ACC_MSG_SEQ to ACC_MSG_SEQ_s.

The mobile station shall process the records in the *General Page Message* in the order they occur using the following procedures:

- The mobile station shall ignore all remaining bits in the message if a page record has:
 - PAGE_CLASS equal to '01' and PAGE_SUBCLASS equal to '10' or '11', or
 - PAGE_CLASS equal to '11' and PAGE_SUBCLASS equal to '01', '10', or '11'.
- If PAGE_CLASS is equal to '00' and PAGE_SUBCLASS is equal to '00', the mobile station shall process the record and shall declare a page match if all the following conditions are met:
 - The mobile station's IMSI_O is a class 0 IMSI (see 6.3.1),
 - IMSI_O_S_s is equal to the IMSI_S received in the page record,
 - IMSI_O_11_12_s is equal to IMSI_11_12_s,
 - MCC_O_s is equal to MCC_s.
- If PAGE_CLASS is equal to '00' and PAGE_SUBCLASS is equal to '01', the mobile station shall process the record and shall declare a page match if all the following conditions are met:
 - The mobile station's IMSI_O is a class 0 IMSI,
 - IMSI_O_S_s is equal to the IMSI_S received in the page record,
 - IMSI_O_11_12_s is equal to the IMSI_11_12 received in the page record, and
 - MCC_O_s is equal to MCC_s.
- If PAGE_CLASS is equal to '00' and PAGE_SUBCLASS is equal to '10', the mobile station shall process the record and shall declare a page match if all the following conditions are met:
 - The mobile station's IMSI_O is a class 0 IMSI,
 - IMSI_O_S_s is equal to the IMSI_S received in the page record,
 - IMSI_O_11_12_s is equal to IMSI_11_12_s, and
 - MCC_O_s is equal to the MCC received in the page record.

- 1 • If PAGE_CLASS is equal to '00' and PAGE_SUBCLASS is equal to '11', the mobile
2 station shall process the record and shall declare a page match if all the following
3 conditions are met:
 - 4 – The mobile station's IMSI_O is a class 0 IMSI,
 - 5 – IMSI_O_S_S is equal to the IMSI_S received in the page record,
 - 6 – IMSI_O_11_12_S is equal to the IMSI_11_12 received in the page record, and
 - 7 – MCC_O_S is equal to the MCC received in the page record.
- 8 • If PAGE_CLASS is equal to '01' and PAGE_SUBCLASS is equal to '00', the mobile
9 station shall process the record and shall declare a page match if all the following
10 conditions are met:
 - 11 – The mobile station's IMSI_O is a class 1 IMSI (see 6.3.1),
 - 12 – IMSI_O_S_S is equal to the IMSI_S received in the page record,
 - 13 – IMSI_O_11_12_S is equal to the IMSI_11_12 received in the page record,
 - 14 – MCC_O_S is equal to MCC_S, and
 - 15 – IMSI_O_ADDR_NUM_S is equal to the IMSI_ADDR_NUM received in the page
16 record.
- 17 • If PAGE_CLASS is equal to '01' and PAGE_SUBCLASS is equal to '01', the mobile
18 station shall process the record and shall declare a page match if all the following
19 conditions are met:
 - 20 – The mobile station's IMSI_O is a class 1 IMSI,
 - 21 – IMSI_O_S_S is equal to the IMSI_S received in the page record,
 - 22 – IMSI_O_11_12_S is equal to the IMSI_11_12 received in the page record,
 - 23 – MCC_O_S is equal to the MCC received in the page record, and
 - 24 – IMSI_O_ADDR_NUM_S is equal to the IMSI_ADDR_NUM received in the page
25 record.
- 26 • If PAGE_CLASS is equal to '10' and PAGE_SUBCLASS is equal to '00', the mobile
27 station shall process the record and shall declare a page match if all the following
28 conditions are met:
 - 29 – The bits of TMSI_CODE_{S-p} are not all equal to '1',
 - 30 – ASSIGNING_TMSI_ZONE_LEN_{S-p} is equal to TMSI_ZONE_LEN_S,
 - 31 – The least significant ASSIGNING_TMSI_ZONE_LEN_{S-p} octets of
32 ASSIGNING_TMSI_ZONE_{S-p} are equal to TMSI_ZONE_S, and
 - 33 – TMSI_CODE_{S-p} is equal to the TMSI_CODE_ADDR received in the page record.
- 34 • If PAGE_CLASS is equal to '10' and PAGE_SUBCLASS is equal to '01', the mobile
35 station shall process the record and shall declare a page match if all the following
36 conditions are met:

- 1 - The bits of TMSI_CODE_{s-p} are not all equal to '1',
- 2 - ASSIGNING_TMSI_ZONE_LEN_{s-p} is equal to TMSI_ZONE_LEN_s,
- 3 - The least significant ASSIGNING_TMSI_ZONE_LEN_{s-p} octets of
- 4 ASSIGNING_TMSI_ZONE_{s-p} are equal to TMSI_ZONE_s,
- 5 - The most significant octet of TMSI_CODE_{s-p} is equal to '00000000', and
- 6 - The least significant 24 bits of TMSI_CODE_{s-p} are equal to the
- 7 TMSI_CODE_ADDR received in the page record.
- 8 • If PAGE_CLASS is equal to '10' and PAGE_SUBCLASS is equal to '10', the mobile
- 9 station shall process the record and shall declare a page match if all the following
- 10 conditions are met:
- 11 - The bits of TMSI_CODE_{s-p} are not all equal to '1',
- 12 - ASSIGNING_TMSI_ZONE_LEN_{s-p} is equal to TMSI_ZONE_LEN_s,
- 13 - The least significant ASSIGNING_TMSI_ZONE_LEN_{s-p} octets of
- 14 ASSIGNING_TMSI_ZONE_{s-p} are equal to TMSI_ZONE_s,
- 15 - The two most significant octets of TMSI_CODE_{s-p} are both equal to '00000000',
- 16 and
- 17 - The least significant 16 bits of TMSI_CODE_{s-p} are equal to the
- 18 TMSI_CODE_ADDR received in the page record.
- 19 • If PAGE_CLASS is equal to '10' and PAGE_SUBCLASS is equal to '11', the mobile
- 20 station shall process the record and shall declare a page match if the following
- 21 conditions are met:
- 22 - The bits of TMSI_CODE_{s-p} are not all equal to '1',
- 23 - ASSIGNING_TMSI_ZONE_LEN_{s-p} is equal to the TMSI_ZONE_LEN received in
- 24 the page record,
- 25 - The least significant ASSIGNING_TMSI_ZONE_LEN_{s-p} octets of
- 26 ASSIGNING_TMSI_ZONE_{s-p} are equal to the TMSI_ZONE received in the page
- 27 record,
- 28 - TMSI_CODE_{s-p} is equal to the TMSI_CODE_ADDR received in the page record.
- 29 • If the mobile station is configured to receive broadcast messages, then for each
- 30 record of the page message with PAGE_CLASS equal to '11' and PAGE_SUBCLASS
- 31 equal to '00', the mobile station shall compare the BURST_TYPE and BC_ADDR
- 32 fields to the burst types and broadcast addresses that the mobile station has been
- 33 configured to receive. If the record contains a burst type and broadcast address
- 34 that the mobile station has been configured to receive, the mobile station should
- 35 perform the broadcast page procedures described in 6.6.2.1.1.3.4. The mobile
- 36 station shall not declare a page match for a page record with PAGE_CLASS equal to
- 37 '11' and PAGE_SUBCLASS equal to '00'.

1 If a page match is declared, the mobile station shall enter the *Update Overhead Information*
 2 *Substate* of the *System Access State* (see 6.6.3.2) with a page response indication within
 3 T_{33m} seconds after the page message is received.

4 If a page match is declared and the mobile station determines that it should be monitoring
 5 a neighboring base station, the mobile station may perform an access entry handoff to the
 6 neighboring base station, if all of the following conditions hold:

- 7 • The neighboring base station is listed in NGHBR_REC.
- 8 • The ACCESS_ENTRY_HO field of the NGHBR_REC corresponding to the neighboring
 9 base station is equal to '1'.
- 10 • None of CONFIG_MSG_SEQ_s, SYS_PAR_MSG_SEQ_s, NGHBR_LST_MSG_SEQ_s,
 11 EXT_NGHBR_LST_MSG_SEQ_s, GEN_NGHBR_LST_MSG_SEQ_s,
 12 CHAN_LST_MSG_SEQ_s, and EXT_SYS_PAR_MSG_SEQ_s are equal to NULL.

13 Otherwise, the mobile station shall not perform an access entry handoff to the neighboring
 14 base station.

15 The mobile station need not perform an access entry handoff to a base station operating on
 16 another frequency.

17 If the mobile station performs an access entry handoff, it shall follow the procedures
 18 specified in 6.6.2.1.4.2 and shall perform the access entry handoff before entering the
 19 *Update Overhead Information Substate* of the *System Access State* (see 6.6.3.2).

20 If PACA is enabled, and if the mobile station performs an access entry handoff, the mobile
 21 station shall respond to the *General Page Message* first, and shall then re-originate the
 22 PACA call on the new base station.

23 6.6.2.4 Mobile Station Order and Message Processing Operation

24 During the *Mobile Station Order and Message Processing Operation*, the mobile station
 25 processes all messages except overhead messages (see 6.6.2.2) and page messages (see
 26 6.6.2.3).

27 The mobile station shall set CURR_ACC_MSG_SEQ to NULL.

28 The mobile station shall perform address matching as described in 6.6.2.1.5. If an address
 29 match is declared, the mobile station shall process the message; otherwise, the mobile
 30 station shall ignore the message.

31 The following cases occur for messages received on the Paging Channel whose ADDRESS
 32 field matches the mobile station's identification data:

- 33 • If the message is a *Data Burst Message* that is addressed to a broadcast address the
 34 mobile station has been configured to receive, the mobile station shall process the
 35 message but shall not acknowledge the message nor return an error message.

- 1 • If the message requires acknowledgment, and is not the *Lock Until Power-Cycled*
2 *Order* or the *Unlock Order*, the mobile station shall acknowledge the message as
3 specified in 6.6.2.1.2. The mobile station shall enter the *Update Overhead*
4 *Information Substate* of the *System Access State* with an order/message response
5 indication within T_{33m} seconds, unless otherwise specified for a particular message.
- 6 • If the message does not require acknowledgment, the mobile station shall transmit a
7 response only if it is required by the message or order. If a response is required, the
8 mobile station shall enter the *Update Overhead Information Substate* of the *System*
9 *Access State* with an order/message response indication within T_{33m} seconds,
10 unless otherwise specified for a particular message.

11 If the mobile station is to enter the *Update Overhead Information Substate* of the *System*
12 *Access State* with an order/message response indication and the mobile station determines
13 that it should be monitoring a neighboring base station, the mobile station may perform an
14 access entry handoff to the neighboring base station, if all of the following conditions hold:

- 15 • The neighboring base station is listed in NGHBR_REC.
- 16 • The ACCESS_ENTRY_HO field of the NGHBR_REC corresponding to the neighboring
17 base station is equal to '1'.
- 18 • ACC_ENT_HO_ORDER_s is equal to '1'.
- 19 • None of CONFIG_MSG_SEQ_s, SYS_PAR_MSG_SEQ_s, NGHBR_LST_MSG_SEQ_s,
20 EXT_NGHBR_LST_MSG_SEQ_s, GEN_NGHBR_LST_MSG_SEQ_s,
21 CHAN_LST_MSG_SEQ_s, and EXT_SYS_PAR_MSG_SEQ_s are equal to NULL.

22 Otherwise, the mobile station shall not perform an access entry handoff to the neighboring
23 base station.

24 The mobile station need not perform an access entry handoff to a base station operating on
25 another frequency.

26 If the mobile station performs an access entry handoff, it shall follow the procedures
27 specified in 6.6.2.1.4.2 and shall perform the access entry handoff before entering the
28 *Update Overhead Information Substate* of the *System Access State* (see 6.6.3.2). If PACA is
29 enabled and the mobile station performs an access entry handoff, the mobile station shall
30 respond to the order/message first and then re-originate the PACA call in the new base
31 station.

32 The following directed messages and orders can be received. If any field value of the
33 message or order is outside its permissible range, the mobile station shall send a *Mobile*
34 *Station Reject Order* with ORDQ equal to '00000100' (message field not in valid range).

- 35 1. *Abbreviated Alert Order*: The mobile station may alert the user.
- 36 2. *Audit Order*
- 37 3. *Authentication Challenge Message*: The mobile station shall process the message
38 and shall respond with an *Authentication Challenge Response Message* as specified
39 in 6.3.12.1.5, regardless of the value of AUTH_s. The mobile station shall enter the

1 *Update Overhead Information Substate of the System Access State with an*
 2 *order/message response indication within T_{32m} seconds.*

3 4. *Base Station Acknowledgment Order*

4 5. *Base Station Challenge Confirmation Order:* The mobile station shall process the
 5 message and shall respond with an *SSD Update Confirmation Order* or *SSD Update*
 6 *Rejection Order* as specified in 6.3.12.1.9. The mobile station shall enter the *Update*
 7 *Overhead Information Substate of the System Access State* with an order/message
 8 response indication within T_{32m} seconds.

9 6. *Channel Assignment Message:* The mobile station shall process the message as
 10 follows:

- 11 • If ASSIGN_MODE_r equals '001', the mobile station shall perform the following
 12 actions: If the message requires acknowledgment, the mobile station shall send
 13 an acknowledgment (see 6.6.3.1.2) using the access channel procedure specified
 14 in 6.6.3.1.1. If a CDMA channel (CDMA_FREQ) is specified in the assignment,
 15 the mobile station shall set CDMACH_s = CDMA_FREQ_r, tune to the new
 16 frequency assignment, and measure the strength of each pilot listed in the
 17 assignment using the Neighbor Set search procedures specified in 6.6.6.2.1 and
 18 6.6.6.2.2. The mobile station shall set CONFIG_MSG_SEQ_s and
 19 ACC_MSG_SEQ_s to NULL (see 6.6.2.2) and shall set PILOT_PN_s to the pilot PN
 20 sequence offset of the strongest pilot in the list (PILOT_PN_r). If the mobile
 21 station has not stored configuration parameters for the Primary Paging Channel
 22 of the new base station, or if the stored information is not current (see 6.6.2.2),
 23 the mobile station shall set SYS_PAR_MSG_SEQ_s, NGHBR_LST_MSG_SEQ_s,
 24 EXT_NGHBR_LST_MSG_SEQ_s, GEN_NGHBR_LST_MSG_SEQ_s, CHAN_LST-
 25 _MSG_SEQ_s, EXT_SYS_PAR_MSG_SEQ_s, and GLOB_SERV_REDIREC_MSG_SEQ_s
 26 to NULL. The mobile station shall set PAGE_CHAN_s to '1' and PAGECH_s to the
 27 Primary Paging Channel. The mobile station shall then begin monitoring the
 28 Primary Paging Channel of the selected base station.
- 29 • If ASSIGN_MODE_r equals '101' and FREQ_INCL_r equals '0', the mobile station
 30 shall perform the following actions: If the message requires an acknowledgment,
 31 the mobile station shall send an acknowledgment (see 6.6.3.1.2) using the
 32 access procedure specified in 6.6.3.1.1. The mobile station shall measure the
 33 strength of each pilot listed in the assignment using the Neighbor Set search
 34 procedures specified in 6.6.6.2.1 and 6.6.6.2.2, set PILOT_PN_s to the pilot PN
 35 sequence offset of the strongest pilot in the list (PILOT_PN_r), and set CONFIG-
 36 _MSG_SEQ_s and ACC_MSG_SEQ_s to NULL (see 6.6.2.2). If the mobile station
 37 has not stored configuration parameters for the Primary Paging Channel of the
 38 new base station, or if the stored information is not current (see 6.6.2.2), the
 39 mobile station shall set SYS_PAR_MSG_SEQ_s, NGHBR_LST_MSG_SEQ_s,
 40 EXT_NGHBR_LST_MSG_SEQ_s, GEN_NGHBR_LST_MSG_SEQ_s, CHAN_LST-
 41 _MSG_SEQ_s, EXT_SYS_PAR_MSG_SEQ_s, and GLOB_SERV_REDIREC_MSG_SEQ_s
 42 to NULL. The mobile station shall set PAGE_CHAN_s to '1' and PAGECH_s to the
 43 Primary Paging Channel. The mobile station shall then begin monitoring the
 44 Primary Paging Channel of the selected base station.

- 1 • If ASSIGN_MODE_r equals '101', FREQ_INCL_r equals '1', and the band class is
2 not supported by the mobile station, the mobile station shall enter the *Update*
3 *Overhead Information Substate* of the *System Access State* with an
4 order/message response indication within T_{33m} seconds and send a *Mobile*
5 *Station Reject Order* with ORDQ field set to '00000110' (capability not supported
6 by the mobile station).
- 7 • If ASSIGN_MODE_r equals '101', FREQ_INCL_r equals '1', and the band class is
8 supported by the mobile station, the mobile station shall perform the following
9 actions: If the message requires an acknowledgment, the mobile station shall
10 send an acknowledgment (see 6.6.3.1.2) using the access procedure specified in
11 6.6.3.1.1. The mobile station shall set CDMACH_s = CDMA_FREQ_r and
12 CDMABAND_s = BAND_CLASS_r. Then the mobile station shall tune to the new
13 frequency assignment; measure the strength of each pilot listed in the
14 assignment using the Neighbor Set search procedures specified in 6.6.6.2.1 and
15 6.6.6.2.2, set PILOT_PN_s to the pilot PN sequence offset of the strongest pilot in
16 the list (PILOT_PN_r), and set CONFIG_MSG_SEQ_s and ACC_MSG_SEQ_s to NULL
17 (see 6.6.2.2). If the mobile station has not stored configuration parameters for
18 the Primary Paging Channel of the new base station, or if the stored information
19 is not current (see 6.6.2.2), the mobile station shall set SYS_PAR_MSG_SEQ_s,
20 NGHBR_LST_MSG_SEQ_s, EXT_NGHBR_LST_MSG_SEQ_s,
21 GEN_NGHBR_LST_MSG_SEQ_s, CHAN_LST_MSG_SEQ_s,
22 EXT_SYS_PAR_MSG_SEQ_s, and GLOB_SERV_REDIR_MSG_SEQ_s to NULL. The
23 mobile station shall set PAGE_CHAN_s to '1' and PAGECH_s to the Primary Paging
24 Channel. The mobile station shall then begin monitoring the Primary Paging
25 Channel of the selected base station.
- 26 • If ASSIGN_MODE_r is not equal to '001' or '101', the mobile station shall enter
27 the *Update Overhead Information Substate* of the *System Access State* with an
28 order/message response indication within T_{33m} seconds and send a *Mobile*
29 *Station Reject Order* with ORDQ field set to '00000010' (message not accepted in
30 this state).

31 7. Data Burst Message

- 32 8. *Extended Channel Assignment Message*: The mobile station shall process the
33 message as follows:

- 1 • If ASSIGN_MODE_r equals '001', FREQ_INCL_r equals '0', the mobile station shall

2 perform the following actions: If the message requires an acknowledgment, the

3 mobile station shall send an acknowledgment (see 6.6.3.1.2) using the access

4 procedure specified in 6.6.3.1.1. The mobile station shall measure the strength

5 of each pilot listed in the assignment using the Neighbor Set search procedures

6 specified in 6.6.6.2.1 and 6.6.6.2.2 set PILOT_PN_s to the pilot PN sequence offset

7 of the strongest pilot in the list (PILOT_PN_r), and set CONFIG_MSG_SEQ_s and

8 ACC_MSG_SEQ_s to NULL (see 6.6.2.2). If the mobile station has not stored

9 configuration parameters for the Primary Paging Channel of the new base

10 station, or if the stored information is not current (see 6.6.2.2), the mobile

11 station shall set SYS_PAR_MSG_SEQ_s, NGHBR_LST_MSG_SEQ_s,

12 EXT_NGHBR_LST_MSG_SEQ_s, GEN_NGHBR_LST_MSG_SEQ_s,

13 EXT_SYS_PAR_MSG_SEQ_s, and GLOB_SERV_REDIR_MSG_SEQ_s to NULL. The

14 mobile station shall set PAGE_CHAN_s to "1" and PAGECH_s to the Primary

15 Paging Channel. The mobile station shall then begin monitoring the Primary

16 Paging Channel of the selected base station.
- 17 • If ASSIGN_MODE_r equals '001', FREQ_INCL_r equals '1', and the band class is

18 not supported by the mobile station, the mobile station shall enter the *Update*

19 *Overhead Information Substate* of the *System Access State* with an

20 order/message response indication within T_{33m} seconds and send a *Mobile*

21 *Station Reject Order* with ORDQ field set to '00000110' (capability not supported

22 by the mobile station).
- 23 • If ASSIGN_MODE_r equals '001', FREQ_INCL_r equals '1', and the band class is

24 supported by the mobile station, the mobile station shall perform the following

25 actions: If the message requires an acknowledgment, the mobile station shall

26 send an acknowledgment (see 6.6.3.1.2) using the access procedure specified in

27 6.6.3.1.1. The mobile station shall set CDMACH_s = CDMA_FREQ_r and

28 CDMABAND_s = BAND_CLASS_r. The mobile station shall set

29 CONFIG_MSG_SEQ_s and ACC_MSG_SEQ_s to NULL (see 6.6.2.2). Then the

30 mobile station shall tune to the new frequency assignment, measure the

31 strength of each pilot listed in the assignment using the Neighbor Set search

32 procedures specified in 6.6.6.2.1 and 6.6.6.2.2, and set PILOT_PN_s to the pilot

33 PN sequence offset of the strongest pilot in the list (PILOT_PN_r). If the mobile

34 station has not stored configuration parameters for the Primary Paging Channel

35 of the new base station, or if the stored information is not current (see 6.6.2.2),

36 the mobile station shall set SYS_PAR_MSG_SEQ_s, NGHBR_LST_MSG_SEQ_s,

37 EXT_NGHBR_LST_MSG_SEQ_s, GEN_NGHBR_LST_MSG_SEQ_s,

38 CHAN_LST_MSG_SEQ_s, EXT_SYS_PAR_MSG_SEQ_s, and

39 GLOB_SERV_REDIR_MSG_SEQ_s to NULL. The mobile station shall set

40 PAGE_CHAN_s to '1' and PAGECH_s to the Primary Paging Channel. The mobile

41 station shall then begin monitoring the Primary Paging Channel of the selected

42 base station.

- If $ASSIGN_MODE_r$ is not equal to '001', the mobile station shall enter the *Update Overhead Information Substate* of the *System Access State* with an order/message response indication within T_{33m} seconds and send a *Mobile Station Reject Order* with ORDQ field set to '00000010' (message not accepted in this state).

9. Feature Notification Message

10. Local Control Order

11. *Lock Until Power-Cycled Order*: The mobile station shall record the reason for the *Lock Until Power-Cycled Order* in the mobile station's semi-permanent memory ($LCKRSN_P_{s-p}$ equals the least significant four bits of $ORDQ_r$). After a mobile station receives this order, it shall not enter the *System Access State* (see 6.6.3) until it has received an *Unlock Order* or until after power-cycling the mobile station (i.e., after the next mobile station power-up). This requirement shall take precedence over any other mobile station requirement specifying entry to the *System Access State*. The mobile station should notify the user of the locked condition. The mobile station shall exit the *Mobile Station Idle State* and enter the *System Determination Substate* of the *Mobile Station Initialization State* with a lock indication (see 6.6.1.1). This allows the mobile station to operate in an alternate operating mode while locked.

12. *Maintenance Required Order*: The mobile station shall record the reason for the *Maintenance Required Order* in the mobile station's semi-permanent memory ($MAINTRSN_{s-p}$ equals the least significant four bits of $ORDQ_r$). If the mobile station has previously received a *Lock Until Power-Cycled Order*, it shall remain in the locked condition; otherwise the mobile station shall remain in the unlocked condition. The mobile station should notify the user of the maintenance required condition.

13. *PACA Message*: If $P_REV_IN_USE_s$ is less than or equal to four, and if the mobile station does not support PACA capability, the mobile station shall send a *Mobile Station Reject Order* with the ORDQ field set to '00000110' (message requires a capability that is not supported by the mobile station); otherwise, the mobile station shall process the message as follows:

- If $PACA_s$ is equal to disabled, the mobile station shall enter the *Update Overhead Information Substate* of the *System Access State* with an order/message response indication within T_{33m} seconds and shall send a *Mobile Station Reject Order* with the ORDQ field set to '00000010' (message not accepted in this state).
- If $PACA_s$ is equal to enabled, the mobile station shall perform the following:
 - If the purpose of the message is to respond to an *Origination Message* ($PURPOSE_r$ is equal to '0000'), the mobile station shall enter the *Update Overhead Information Substate* of the *System Access State* with an order/message response indication within T_{33m} seconds and send a *Mobile Station Reject Order* with the ORDQ field set to '00000010' (message not accepted in this state).

- 1 - If the purpose of the message is to provide the queue position of the PACA
2 call ($PURPOSE_r$ is equal to '0001'), the mobile station shall set the PACA
3 state timer to the duration shown in Table 7.7.2.3.2.20-2, corresponding to
4 the value of $PACA_TIMEOUT_s$, should indicate to the user that the PACA call
5 is still queued, and should indicate the current queue position (Q_POS_r) of
6 the call.
- 7 - If the purpose of the message is to instruct the mobile station to re-originate
8 the PACA call ($PURPOSE_r$ is equal to '0010'), the mobile station shall set the
9 PACA state timer to the duration shown in Table 7.7.2.3.2.20-2
10 corresponding to the value of $PACA_TIMEOUT_s$, and the mobile station shall
11 enter the *Update Overhead Information Substate* of the *System Access State*
12 (see 6.6.3) with a PACA response indication within T_{33m} seconds to re-
13 originate the PACA call.
- 14 - If the purpose of the message is to cancel the PACA call ($PURPOSE_r$ is equal
15 to '0011'), the mobile station shall set $PACA_s$ to disabled and $PACA_CANCEL$
16 to '0', shall disable the PACA state timer, and should indicate to the user
17 that the PACA call has been canceled.
- 18 14. *Registration Accepted Order*: If $ORDQ_r$ is equal to '00000101', the mobile station
19 shall set $ROAM_INDI_s = ROAM_INDI_r$ and should display the roaming condition.
- 20 15. *Registration Rejected Order*: This order indicates that normal service is not available
21 on this system. The mobile station shall disable the full-TMSI timer. If the received
22 order specifies to delete the TMSI ($ORDQ = '00000100'$), the mobile station shall set
23 all the bits of the $TMSI_CODE_{s-p}$ to '1'. The mobile station shall enter the *System*
24 *Determination Substate* of the *Mobile Station Initialization State* with a registration
25 rejected indication (see 6.6.1.1).
- 26 16. *Registration Request Order*: The mobile station shall process the message and
27 perform registration procedures as specified in 6.6.5.5.2.3.
- 28 17. *Service Redirection Message*: The mobile station shall process the message as
29 follows:
 - 30 • If the mobile station is directed to an unsupported operation mode or band
31 class, the mobile station shall respond with a *Mobile Station Reject Order* with
32 $ORDQ$ equal to '00000110' (message requires a capability that is not supported
33 by the mobile station).
 - 34 • If $DELETE_TMSI_r$ is equal to '1', the mobile station shall set all the bits of
35 $TMSI_CODE_{s-p}$ to '1'. The mobile station shall disable the full-TMSI timer.
 - 36 • The mobile station shall set $RETURN_IF_FAIL_s = RETURN_IF_FAIL_r$.
 - 37 • If $RECORD_TYPE_r$ is equal to '00000000', the mobile station shall enter the
38 *System Determination Substate* of the *Mobile Station Initialization State* with an
39 NDSS off indication (see 6.6.1.1); otherwise, the mobile station shall store the
40 redirection record received in the message as $REDIRECT_REC_s$ and shall enter
41 the *System Determination Substate* of the *Mobile Station Initialization State* with a
42 redirection indication (see 6.6.1.1).

18. *SSD Update Message*: The mobile station shall process the message and shall respond with a *Base Station Challenge Order* as specified in 6.3.12.1.9. The mobile station shall enter the *Update Overhead Information Substate* of the *System Access State* with an order/message response indication within T_{32m} seconds.
19. *Status Request Message*: The mobile station shall process the message. If $P_REV_IN_USE_s$ is less than or equal to three, the mobile station shall respond with a *Status Response Message*. If $P_REV_IN_USE_s$ is greater than three, the mobile station shall respond with an *Extended Status Response Message*. The mobile station shall enter the *Update Overhead Information Substate* of the *System Access State* with an order/message response indication within T_{33m} seconds. If the message does not specify any qualification information ($QUAL_INFO_TYPE_r$ is equal to '00000000'), the mobile station shall include the requested information records in the response. If the message specifies a band class ($QUAL_INFO_TYPE_r$ is equal to '00000001'), the mobile station shall only include the requested information records for the specified band class ($BAND_CLASS_r$) in the response. If the message specifies a band class and an operating mode ($QUAL_INFO_TYPE_r$ is equal to '00000010'), the mobile station shall only include the requested information records for the specified band class ($BAND_CLASS_r$) and operating mode (OP_MODE_r) in the response. If the message specifies a band class or a band class and an operating mode which is not supported by the mobile station, the mobile station shall send a *Mobile Station Reject Order* with $ORDQ$ set to '00000110' (message requires a capability that is not supported by the mobile station). If the response to this message exceeds the allowable length, the mobile station shall send a *Mobile Station Reject Order* with $ORDQ$ set to '00001000' (response message would exceed the allowable length). If the message specifies an information record which is not supported by the mobile station for the specified band class and operating mode, the mobile station shall send a *Mobile Station Reject Order* with $ORDQ$ set to '00001001' (information record is not supported for the specified band class and operating mode).
20. *TMSI Assignment Message*: The mobile station shall store the TMSI zone and code as follows:
- The mobile station shall store the length of the TMSI zone field by setting $ASSIGNING_TMSI_ZONE_LEN_{s-p}$ to $TMSI_ZONE_LEN_r$,
 - The mobile station shall store the assigning TMSI zone number by setting the $ASSIGNING_TMSI_ZONE_LEN_{s-p}$ least significant octets of $ASSIGNING_TMSI_ZONE_{s-p}$ to $TMSI_ZONE_r$, and
 - The mobile station shall store the TMSI code by setting $TMSI_CODE_{s-p}$ to $TMSI_CODE_r$.
- The mobile station shall set the TMSI expiration time by setting $TMSI_EXP_TIME_{s-p}$ to $TMSI_EXP_TIME_r$. The mobile station shall disable the full-TMSI timer. The mobile station shall then respond with a *TMSI Assignment Completion Message* within T_{56m} seconds.

21. *Unlock Order*: After receiving this order, the mobile station is no longer locked. The mobile station should notify the user that the locked condition has been removed. The mobile station shall enter the *System Determination Substate* of the *Mobile Station Initialization State* with an unlock indication (see 6.6.1.1).

The mobile station shall ignore all other messages and orders.

6.6.2.5 Mobile Station Origination Operation

The *Mobile Station Origination Operation* is performed when the mobile station is directed by the user to initiate a call, or if the *Mobile Station Idle State* is entered with NDSS_ORIG_s enabled.

If the mobile station is directed by the user to initiate a call, the mobile station shall perform the following:

- If PACA_s is equal to enabled, the mobile station shall set PACA_s to disabled and PACA_CANCEL to '0', shall disable the PACA state timer, and should indicate to the user that the PACA call has been canceled.
- The mobile station shall set CURR_ACC_MSG_SEQ to NULL.

The mobile station shall enter the *Update Overhead Information Substate* of the *System Access State* (see 6.6.3) with an origination indication within T_{33m} seconds.

6.6.2.6 Mobile Station Message Transmission Operation

Support of this operation is optional. If the mobile station supports the *Mobile Station Message Transmission Operation*, the operation is performed when the user directs the mobile station to transmit a *Data Burst Message*.

If the mobile station supports this operation, the mobile station shall set CURR_ACC_MSG_SEQ to NULL.

If the mobile station supports this operation, the mobile station shall enter the *Update Overhead Information Substate* of the *System Access State* (see 6.6.3.2) with a message transmission indication within T_{33m} seconds.

6.6.2.7 Mobile Station Power-Down Operation

The *Mobile Station Power-Down Operation* is performed when the user directs the mobile station to power down.

The mobile station shall update stored parameters and perform other registration procedures as specified in 6.6.5.5.2.4.

If no power-down registration is performed (see 6.6.5.5.2.4), the mobile station may power down.

6.6.2.8 Mobile Station PACA Cancel Operation

The *Mobile Station PACA Cancel Operation* is performed when the user directs the mobile station to cancel a PACA call.

If PACA_s is equal to enabled, the mobile station shall perform the following:

- 1 • The mobile station shall set PACA_s to disabled.
- 2 • The mobile station shall set PACA_CANCEL to '0', if PACA_CANCEL is equal to '1'.
- 3 • The mobile station shall disable the PACA state timer.
- 4 • The mobile station should indicate to the user that the PACA call has been canceled.
- 5 • The mobile station shall set CURR_ACC_MSG_SEQ to NULL.
- 6 • The mobile station shall enter the *Update Overhead Information Substate* of the
- 7 *System Access State* (see 6.6.3) with a PACA cancel indication within T_{33m} seconds.

8 6.6.3 System Access State

9 In this state, the mobile station sends messages to the base station on the Access
10 Channel(s) and receives messages from the base station on the Paging Channel.

11 As illustrated in Figure 6.6.3-1, the *System Access State* consists of the following substates:

- 12 • *Update Overhead Information Substate* - In this substate, the mobile station
- 13 monitors the Paging Channel until it has a current set of overhead messages.
- 14 • *Mobile Station Origination Attempt Substate* - In this substate, the mobile station
- 15 sends an *Origination Message* to the base station.
- 16 • *Page Response Substate* - In this substate, the mobile station sends a *Page*
- 17 *Response Message* to the base station.
- 18 • *Mobile Station Order/Message Response Substate* - In this substate, the mobile
- 19 station sends a response to a message received from the base station.
- 20 • *Registration Access Substate* - In this substate, the mobile station sends a
- 21 *Registration Message* to the base station.
- 22 • *Mobile Station Message Transmission Substate* - In this substate, the mobile station
- 23 sends a *Data Burst Message* to the base station.
- 24 • *PACA Cancel Substate* - In this substate, the mobile station sends a *PACA Cancel*
- 25 *Message* to the base station.

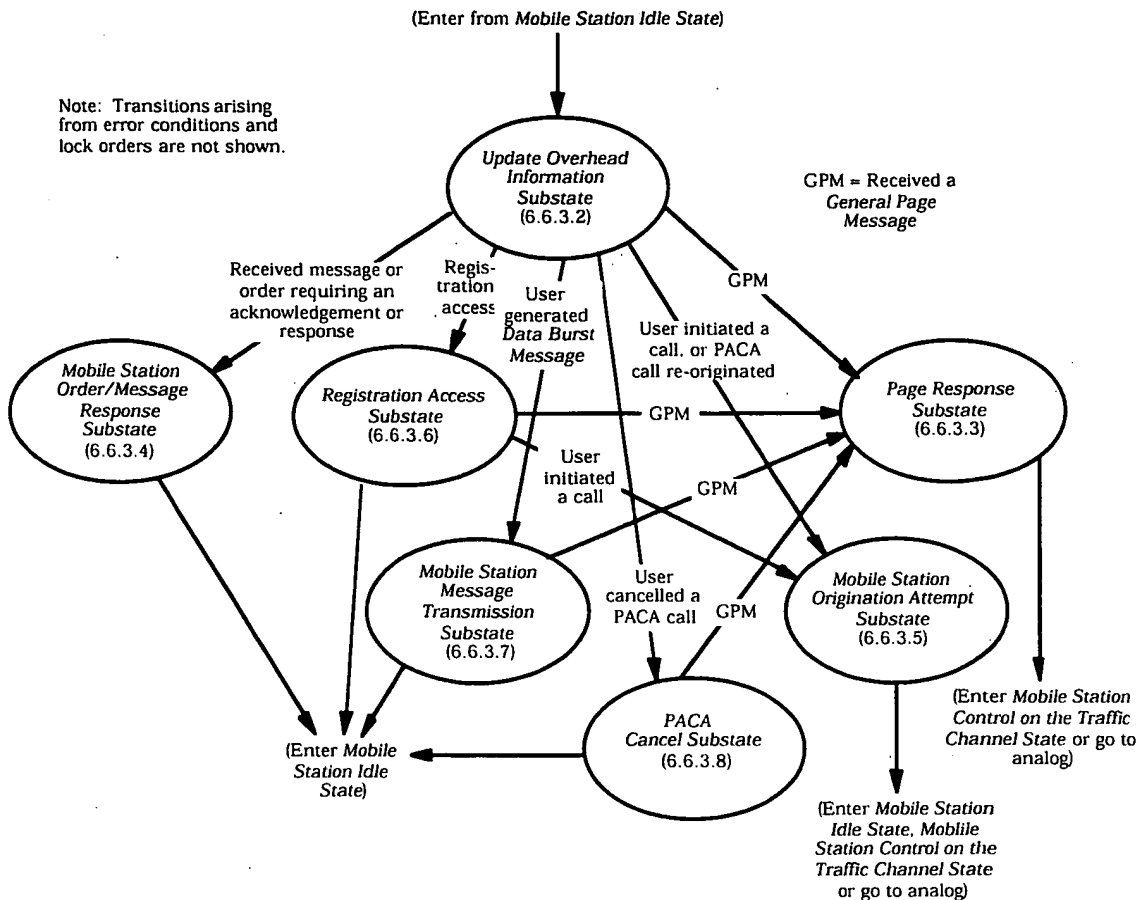


Figure 6.6.3-1. System Access State

6.6.3.1 Access Procedures

6.6.3.1.1 Access Attempts

6.6.3.1.1.1 Overview

The mobile station transmits on the Access Channel using a random access procedure. Many parameters of the random access procedure are supplied by the base station in the *Access Parameters Message*.

The entire process of sending one message and receiving (or failing to receive) an acknowledgment for that message is called an access attempt (see Figure 6.6.3.1.1.1-1 and the example in Figure 6.6.3.1.1.1-2). One access attempt consists of one or more access sub-attempts (see Figure 6.6.3.1.1.1-1). Each transmission in the access sub-attempt is called an access probe. Each access probe consists of an Access Channel preamble and an Access Channel message capsule (see Figure 6.6.3.1.1.1-1 and Table 6.6.3.1.1.1-1).

When the mobile station stops transmitting access probes of an access attempt to one pilot and begins transmitting access probes of an access attempt to another pilot, it is said to

perform an access probe handoff (see 6.6.3.1.3.3). The portion of an access attempt which begins when the mobile station begins transmitting access probes to one pilot, and ends when the mobile station either performs an access probe handoff or receives an acknowledgment for that message is called an access sub-attempt.

Within an access sub-attempt, access probes are grouped into access probe sequences. The Access Channel used for each access probe sequence is chosen pseudorandomly from among all the Access Channels associated with the current Paging Channel. If there is only one Access Channel associated with the current paging channel, all access probes within an access probe sequence are transmitted on the same Access Channel. If there is more than one access channel associated with the current Paging Channel, all access probes within an access probe sequence may be transmitted on the different Access Channels associated with the current Paging Channel. Each access probe sequence consists of up to $1 + \text{NUM_STEP}_s$ access probes. The first access probe of each access probe sequence is transmitted at a specified power level relative to the nominal open loop power level. Each subsequent access probe is transmitted at a power level that is adjusted by the PWR_STEP_s plus the mean input power change plus the interference correction change from the previous access probe (see 6.1.2.3.1).

The timing of access probes and access probe sequences is expressed in terms of Access Channel slots (see 6.7.1.1). The transmission of an access probe begins at the start of an Access Channel slot. There are two types of messages sent on the Access Channel: a response message (one that is a response to a base station message) or a request message (one that is sent autonomously by the mobile station). Different procedures are used for sending a response message and for sending a request message. The timing of the start of each access probe sequence is determined pseudorandomly. For every access probe sequence, a backoff delay, RS, from 0 to $1 + \text{BKOFF}_s$ slots is generated pseudorandomly.

For request access probe sequences only, an additional delay is imposed by the use of a persistence test that determines the value of the Persistence Delay, PD^4 (see 6.6.3.1.1.2). For each slot after the backoff delay, RS, the mobile station performs a pseudorandom test, with parameters that depend on the reason for the access attempt and the access overload class, ACCOLC_p , of the mobile station. If the test passes, the first access probe of the sequence begins in that slot. If the test fails, the access probe sequence is deferred until at least the next slot.

Timing between access probes of an access probe sequence is also generated pseudorandomly. After transmitting each access probe, the mobile station waits a specified period, $\text{TA} = (2 + \text{ACC_TMO}_s) \times 80$ ms, from the end of the slot to receive an acknowledgment from the base station. If an acknowledgment is received, the access attempt ends. If no acknowledgment is received and the mobile station transmits all access probes within an access probe sequence on the same Access Channel associated with the current Paging Channel, the next access probe is transmitted after an additional backoff

⁴ A persistence test is not needed for response access attempts, because the base station controls the arrival rate of response messages directly by controlling the rate at which it transmits messages requiring responses.

1 delay, RT , from 0 to $1 + \text{PROBE_BKOFF}_S$ slots. If no acknowledgment is received and the
2 mobile station pseudorandomly selects an Access Channel from among all Access Channels
3 associated with the current Paging Channel, the next access probe is transmitted after an
4 additional backoff delay, RT , from 0 to PROBE_BKOFF_S slots.

5 The precise timing of the Access Channel transmissions in an access attempt is determined
6 by a procedure called PN randomization. For each access sub-attempt, the mobile station
7 computes a delay, RN , from 0 to $2^{\text{PROBE_PN_RAN}} - 1$ PN chips using a (non-random) hash
8 function that depends on its ESN. The mobile station delays its transmit timing by RN
9 PN chips. This transmit timing adjustment includes delay of the direct sequence spreading
10 long code and of the quadrature spreading I and Q pilot PN sequences, so it effectively
11 increases the apparent range from the mobile station to the base station.⁵

⁵ This increases the probability that the base station will be able to separately demodulate transmissions from multiple mobile stations in the same Access Channel slot, especially when many mobile stations are at a similar range from the base station. Use of a non-random algorithm for PN randomization permits the base station to separate the PN randomization from the actual propagation delay from the mobile station, so it can accurately estimate the timing of Reverse Traffic Channel transmissions from the mobile station.

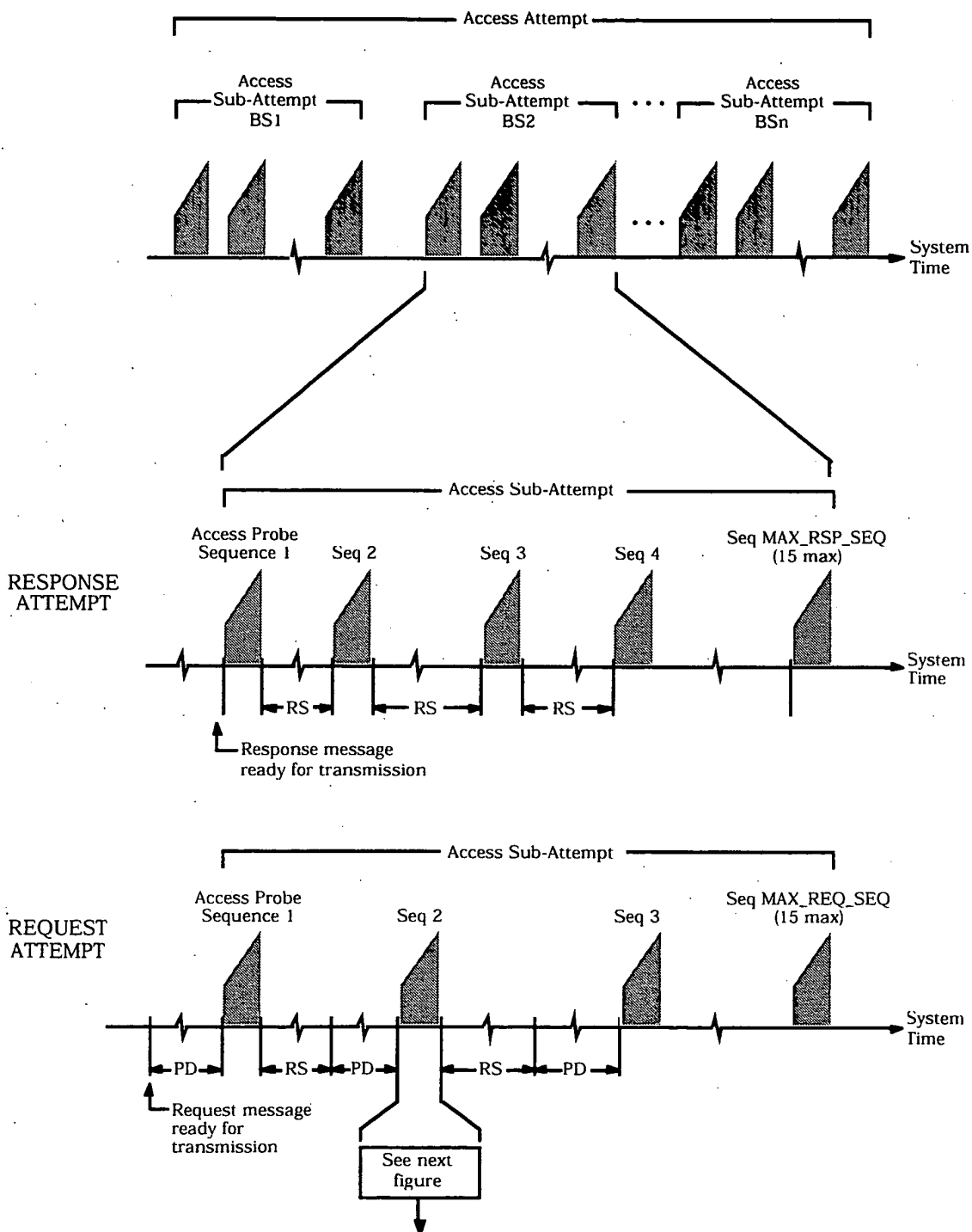


Figure 6.6.3.1.1.1-1. Access Attempt (Part 1 of 2)

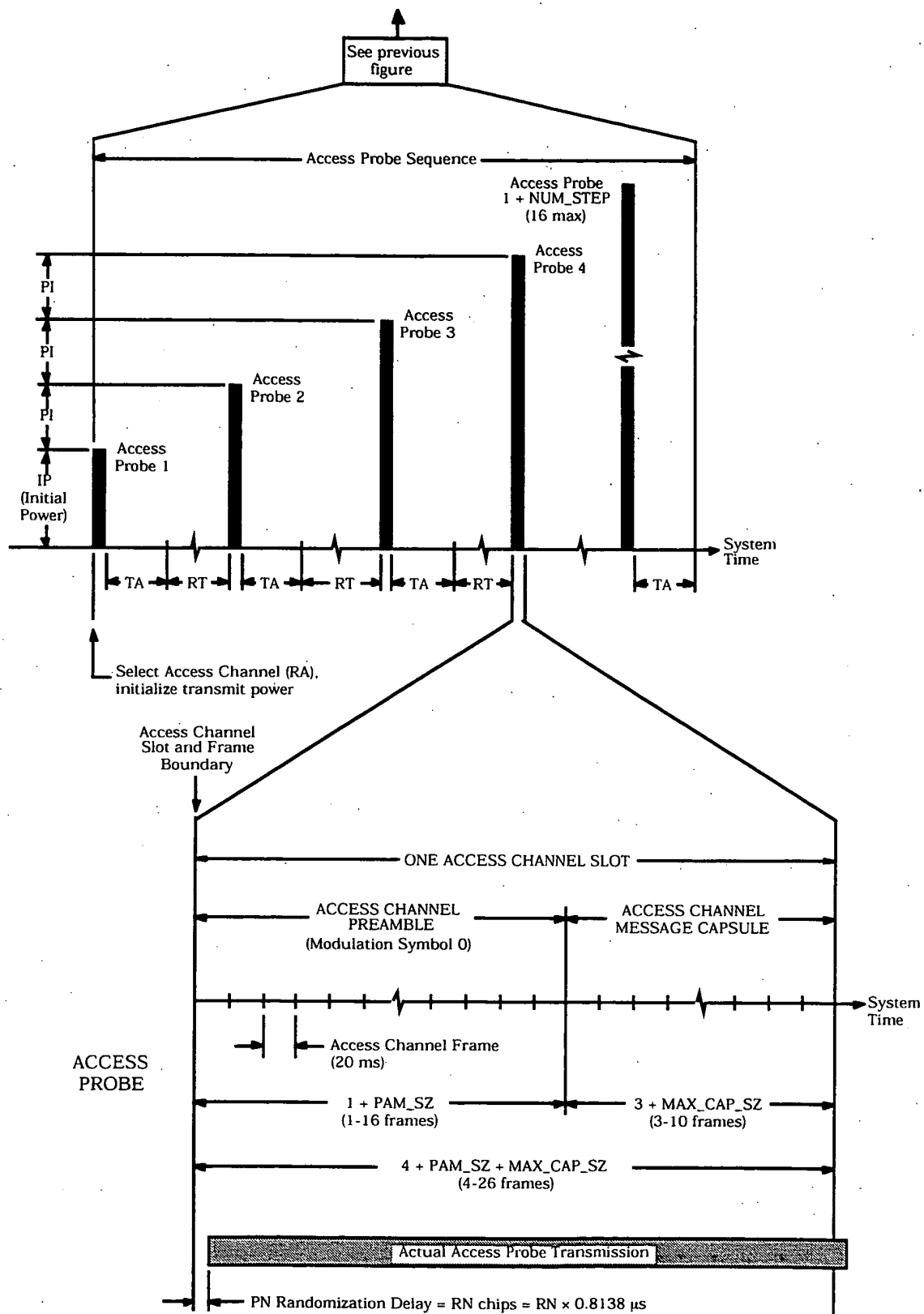


Figure 6.6.3.1.1.1-1. Access Attempt (Part 2 of 2)

Table 6.6.3.1.1.1-1. Calculated, Random, and Hashed Variables

| Variable | Name | Generation | Range | Units |
|----------|-------------------------|---|--------------------------|-------|
| IP | Initial Open-Loop Power | $IP =$ <ul style="list-style-type: none"> - mean input power (dBm) + offset power + NOM_PWR - $16 \times \text{NOM_PWR_EXT}$ + INIT_PWR + interference correction | See 6.1.2.1 6.1.2.2.1 | dBm |
| PD | Persistence Delay | Delay continues slot-by-slot until persistence test (run every slot) passes. | — | slots |
| PI | Power Increment | $PI =$ <ul style="list-style-type: none"> PWR_STEP_S + change in mean input power + change in interference correction | — | dB |
| RA | Access Channel Number | Random between 0 and ACC_CHAN _S ; generated before every access probe sequence or every access probe. | 0 to 31 | — |
| RN | PN Randomization Delay | Hash using ESN between 0 and $2^{\text{PROBE_PN_RAN}} - 1$; generated once at the beginning of each access sub-attempt. | 0 to 511 | chips |
| RS | Sequence Backoff | Random between 0 and $1 + \text{BKOFF}_S$; generated before every sequence of an access sub-attempt (except the first sequence). | 0 to 16 | slots |
| RT | Probe Backoff | Random between 0 and $1 + \text{PROBE_BKOFF}_S$; generated before subsequent probes if the mobile station transmits all access probes within an access probe sequence on the same Access Channel. Random between 0 and PROBE_BKOFF_S ; generated before subsequent probes if the mobile station pseudorandomly selects an Access Channel from among all Access Channels associated with the current Paging Channel. | 0 to 16 | slots |
| TA | Ack Response Timeout | $TA = 80 \times (2 + \text{ACC_TMO}_S)$; timeout from end of slot. | 160 to 1360 | ms |

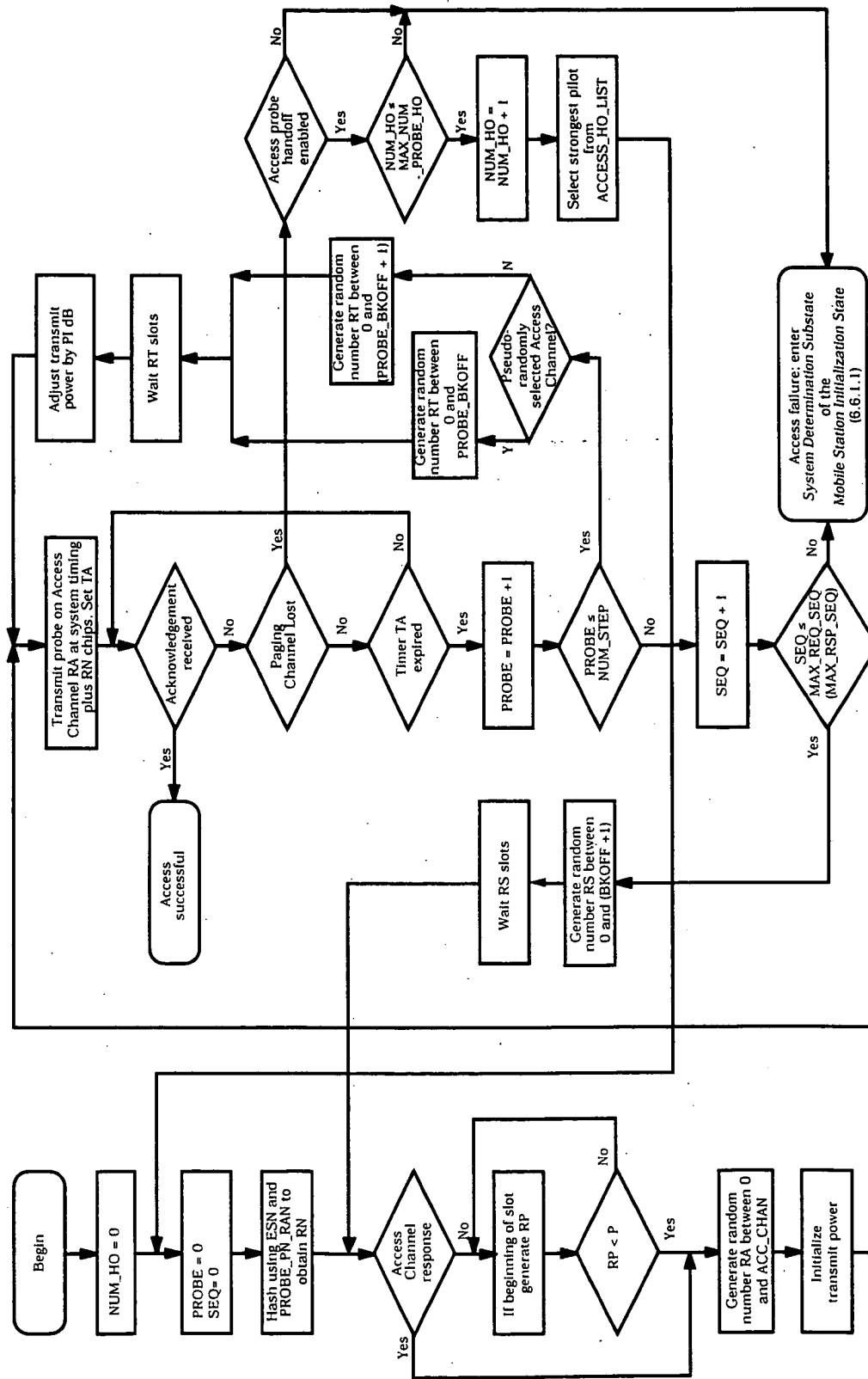


Figure 6.6.3.1.1.1-2. Access Procedure Example

6.6.3.1.1.2 Requirements

Each time the mobile station performs an access sub-attempt, it shall compute a number, RN, from 0 to $2^{\text{PROBE_PN_RAN}} - 1$, using the hashing technique described in 6.6.7.1. For the duration of this access sub-attempt, the mobile station shall delay its transmit timing (see 6.1.3.2.1), including long code direct sequence spreading (see 6.1.3.2.8) and I and Q pilot PN sequence quadrature spreading (see 6.1.3.2.9), by RN PN chips.

When the mobile station performs an access sub-attempt, it shall transmit one or more access probe sequences. If the access sub-attempt is an Access Channel request, the mobile station shall transmit no more than MAX_REQ_SEQ_s access probe sequences to the pilot for the access sub-attempt; if the access sub-attempt is an Access Channel response, the mobile station shall transmit no more than MAX_RSP_SEQ_s access probe sequences to the pilot for the access sub-attempt.

Before transmitting each access probe sequence, the mobile station shall generate a random number, RA, from 0 to ACC_CHAN_s using the procedure described in 6.6.7.2. If the mobile station transmits all access probes within an access probe sequence on the same Access Channel, the mobile station shall use this random number, RA, as the Access Channel number, ACN, in the Access Channel long code mask for all access probes in that access probe sequence (see 6.1.3.1.8).

Before transmitting each access probe within an access probe sequence, if there is more than one Access Channel associated with the current Paging Channel, the mobile station should generate a random number, RA, from 0 to ACC_CHAN_s , using the procedure described in 6.6.7.2. The mobile station shall use this random number, RA, as the Access Channel number, ACN, in the Access Channel long code mask for that access probe in that access probe sequence (see 6.1.3.1.8).

Before transmitting each access probe sequence of an access sub-attempt other than the first access probe sequence of the access sub-attempt, the mobile station shall generate a random number, RS, from 0 to $(\text{BKOFF}_s + 1)$, using the procedure described in 6.6.7.2. The mobile station shall delay the transmission of the access probe sequence for RS slots.

If the access attempt is an Access Channel request, then before transmitting the first access probe in each access probe sequence, and after the delay of RS if applicable, the mobile station shall perform a persistence test for each Access Channel slot. The mobile station shall transmit the first access probe of a probe sequence in a slot only if the test passes for that slot. To perform the persistence test, the mobile station shall generate a random number RP, $0 < \text{RP} < 1$, using the technique described in 6.6.7.2. The persistence test is said to pass when RP is less than the current value of P for the type of this access attempt. If P equals 0, the mobile station shall end the access attempt, declare an access attempt failure and update its registration variables using SID_s , NID_s , REG_ZONE_s , and ZONE_TIMER_s that were stored from the first base station to which the mobile station sent an Access Probe, as specified in 6.6.5.5.3.2, and enter the *System Determination Substate* of the *Mobile Station Initialization State* with an access denied indication (see 6.6.1.1).

If the Access Channel request is a registration, P shall be computed by

$$P = \begin{cases} 2^{-PSIST_s/4} \times 2^{-REG_PSIST_s} & \text{if } PSIST_s \neq 63 \\ 0 & \text{otherwise} \end{cases} \quad ACCOLC_p = 0, 1, \dots, 9$$

$$P = \begin{cases} 2^{-PSIST_s} \times 2^{-REG_PSIST_s} & \text{if } PSIST_s \neq 7 \\ 0 & \text{otherwise} \end{cases} \quad ACCOLC_p = 10, 11, \dots, 15$$

where $PSIST_s$ and REG_PSIST_s are the stored values of these parameters from the *Access Parameters Message*.

If the Access Channel request is a message transmission, P shall be computed by

$$P = \begin{cases} 2^{-PSIST_s/4} \times 2^{-MSG_PSIST_s} & \text{if } PSIST_s \neq 63 \\ 0 & \text{otherwise} \end{cases} \quad ACCOLC_p = 0, 1, \dots, 9$$

$$P = \begin{cases} 2^{-PSIST_s} \times 2^{-MSG_PSIST_s} & \text{if } PSIST_s \neq 7 \\ 0 & \text{otherwise} \end{cases} \quad ACCOLC_p = 10, 11, \dots, 15$$

where $PSIST_s$ and MSG_PSIST_s are the stored values of these parameters from the *Access Parameters Message*.

If the Access Channel request is other than a registration or a message transmission, P shall be computed by

$$P = \begin{cases} 2^{-PSIST_s/4} & \text{if } PSIST_s \neq 63 \\ 0 & \text{otherwise} \end{cases} \quad ACCOLC_p = 0, 1, \dots, 9$$

$$P = \begin{cases} 2^{-PSIST_s} & \text{if } PSIST_s \neq 7 \\ 0 & \text{otherwise} \end{cases} \quad ACCOLC_p = 10, 11, \dots, 15$$

where $PSIST_s$ is the stored value of this parameter from the *Access Parameters Message*.

The mobile station shall transmit the first probe in each access probe sequence at the power level specified in 6.1.2.3.1. The mobile station shall transmit each subsequent probe in the access probe sequence at a power level PWR_STEP_s dB greater than that of the previous probe. The mobile station should update the pilot identities and strengths as described in 6.6.3.1.7. Between access probes, the mobile station shall disable its transmitter.

After transmitting each probe, the mobile station shall wait $TA = (2 + ACC_TMO_s) \times 80$ ms from the end of the Access Channel slot. If no acknowledgment is received within TA seconds, the mobile station shall perform the following:

- 1 • If NUM_STEP_s or fewer access probes have been transmitted in this access probe
2 sequence, and if the mobile station transmits all access probes within an access
3 probe sequence on the same Access Channel, the mobile station shall generate a
4 random number, RT, from 0 to 1 + PROBE_BKOFF, using the procedure described
5 in 6.6.7.2. If NUM_STEP_s or fewer access probes have been transmitted in this
6 access probe sequence, and if the mobile station pseudorandomly selects an Access
7 Channel among all Access Channels associated with the current Paging Channel,
8 the mobile station shall generate a random number, RT, from 0 to PROBE_BKOFF_s,
9 using the procedure described in 6.6.7.2. The mobile station shall delay RT
10 additional Access Channel slots, and shall then transmit the next access probe.
- 11 • Otherwise, if fewer than MAX_REQ_SEQ_s (for a request access) or MAX_RSP_SEQ_s
12 (for a response access) access probe sequences have been transmitted in this access
13 sub-attempt, the mobile station shall begin the randomization procedures for
14 another access probe sequence.
- 15 • Otherwise, the mobile station shall declare an access attempt failure and update its
16 registration variables using SID_s, NID_s, REG_ZONE_s, and ZONE_TIMER_s that were
17 stored from the first base station to which the mobile station transmitted an Access
18 Probe, as specified in 6.6.5.5.3.2 and enter the *System Determination Substate* of the
19 *Mobile Station Initialization State* with a system lost indication (see 6.6.1.1).

20 The mobile station may delay or cancel the transmission of access probes within an access
21 attempt in the event of a loss of the Paging Channel (see 6.4.3).

22 6.6.3.1.2 Acknowledgment Procedures

23 The acknowledgment procedures facilitate the reliable exchange of messages between the
24 base station and the mobile station. The mobile station uses the fields ACK_TYPE
25 (acknowledgment address type), ACK_SEQ (acknowledgment sequence number), MSG_SEQ
26 (message sequence number), ACK_REQ (acknowledgment required), and VALID_ACK (valid
27 acknowledgment) to support this mechanism. These fields are referred to as layer 2 fields,
28 and the acknowledgment procedures are referred to as layer 2 procedures. All other
29 message fields and the processing thereof are referred to as pertaining to layer 3. (See
30 Annex C for further discussion of layering.)

31 The mobile station shall perform duplicate detection and process duplicate messages as
32 specified in 6.6.2.1.2.

33 The mobile station shall set the ACK_TYPE, ACK_SEQ and VALID_ACK fields of all
34 messages sent on the Access Channel as specified in 6.6.2.1.2.

35 The mobile station shall generate a single set of MSG_SEQ numbers for messages sent on
36 the Access Channel. The mobile station shall set the MSG_SEQ field to '000' in the first
37 message sent on the Access Channel after powering on. The mobile station may set the
38 MSG_SEQ field to '000' in the first message sent on the Access Channel after a transition
39 from analog mode to CDMA mode, or from another CDMA band class. The mobile station
40 shall increment MSG_SEQ, modulo 8, for each new access attempt, even if the contents of
41 the new message are identical to those of the previous message.

The mobile station shall monitor the Paging Channel while in the *System Access State*. When the mobile station receives a message with the VALID_ACK field set to '1' and the ACK_SEQ field set to the MSG_SEQ number of the message currently being sent, the mobile station shall consider the current message to have been acknowledged and shall end the access attempt.

If no message requiring acknowledgment has been received, the mobile station shall not include an acknowledgment in any transmitted message until a message is received that requires acknowledgment. After a message including an acknowledgment has been sent, the mobile station shall not include an acknowledgment in any subsequent transmitted message until another message is received that requires acknowledgment.

Unless otherwise specified in the requirements for processing a specific message, the mobile station shall transmit an acknowledgment in response to any message received that is addressed to the mobile station and that has the ACK_REQ field set to '1'. If a specific message is required in response to a message requiring acknowledgment, the acknowledgment shall be included with the response. If no specific message is required to be transmitted in response to a received message requiring acknowledgment, the mobile station shall include the acknowledgment in a *Mobile Station Acknowledgment Order* (see 6.7.3).

The mobile station shall not begin a new access attempt until the previous access attempt has ended.

6.6.3.1.3 Handoffs

While in the *System Access State*, the mobile station shall continue its pilot search (see 6.6.3.1.3.1), and may perform access handoffs (see 6.6.3.1.3.2) or access probe handoffs (see 6.6.3.1.3.3).

6.6.3.1.3.1 Pilot Search

The following sets of pilot offsets are defined for a mobile station in the *System Access State*. Each pilot offset is a member of only one set.

- Active Set: The pilot offset of the Forward CDMA Channel whose Paging Channel is being monitored.
- Neighbor Set: The pilots that are not currently in the Active Set and are likely candidates for access handoff or access probe handoff. The members of the Neighbor Set are specified in the *Neighbor List Message*, the *Extended Neighbor List Message*, and the *General Neighbor List Message*.
- Remaining Set: The set of all possible pilot offsets in the current system (integer multiples of PILOT_INC_S) on the current CDMA frequency assignment, excluding the pilots in the Neighbor Set and the Active Set.

6.6.3.1.3.2 Access Handoff

The mobile station is permitted to perform an access handoff to use the Paging Channel with the best pilot strength and an associated Access Channel. The mobile station is permitted to perform an access handoff when waiting for a response from the base station

1 or before sending a response to the base station. An access handoff is permitted after an
 2 access attempt while the mobile station is in the *Page Response Substate* or the *Mobile*
 3 *Station Origination Attempt Substate*.

4 When the mobile station declares a loss of the Paging Channel, the mobile station shall
 5 perform an access handoff while waiting for a response from the base station in the *System*
 6 *Access State* if the mobile station is not performing an access attempt and all of the
 7 following conditions hold:

- 8 • The new base station is in the list ACCESS_HO_LIST,
- 9 • ACCESS_HO_S is equal to '1', and
- 10 • The mobile station is in the *Page Response Substate* or the *Mobile Station Origination*
 11 *Attempt Substate*.

12 When the mobile station declares a loss of the Paging Channel, the mobile station shall
 13 perform an access handoff after receiving a message and before responding to that message
 14 while in the *System Access State* if the mobile station is not performing an access attempt
 15 and all of the following conditions hold:

- 16 • The new base station is in the list ACCESS_HO_LIST,
- 17 • ACCESS_HO_S is equal to '1',
- 18 • ACCESS_HO_MSG_RSP_S is equal to '1', and
- 19 • The mobile station is in the *Page Response Substate* or the *Mobile Station Origination*
 20 *Attempt Substate*.

21 When the mobile station declares an insufficiency of the Paging Channel, the mobile station
 22 may perform an access handoff while waiting for a response from the base station in the
 23 *System Access State* if the mobile station is not performing an access attempt and all of the
 24 following conditions hold:

- 25 • The new base station is in the list ACCESS_HO_LIST,
- 26 • ACCESS_HO_S is equal to '1', and
- 27 • The mobile station is in the *Page Response Substate* or the *Mobile Station Origination*
 28 *Attempt Substate*.

29 When the mobile station declares an insufficiency of the Paging Channel, the mobile station
 30 may perform an access handoff after receiving a message and before responding to that
 31 message while in the *System Access State* if the mobile station is not performing an access
 32 attempt and all of the following conditions hold:

- 33 • The new base station is in the list ACCESS_HO_LIST,
- 34 • ACCESS_HO_S is equal to '1',
- 35 • ACCESS_HO_MSG_RSP_S is equal to '1', and
- 36 • The mobile station is in the *Page Response Substate* or the *Mobile Station Origination*
 37 *Attempt Substate*.

Before the mobile station transmits an access probe to the new base station, the mobile station shall update the parameters based on the *System Parameters Message*, the *Access Parameters Message* and the *Extended System Parameters Message* on the associated new Paging Channel and process the parameters from the messages (see 6.6.2.2.1, 6.6.2.2.2, and 6.6.2.2.5). The mobile station shall update the parameters based on the *Neighbor List Message*, *Extended Neighbor List Message* or the *General Neighbor List Message* on the associated new Paging Channel and process the parameters from the message (see 6.6.2.2.3, 6.6.2.2.7, and 6.6.2.2.8). If the mobile station receives a *Global Service Redirection Message* (see 6.6.2.2.6) which directs the mobile station away from the new base station, the mobile station shall not access the new base station. The mobile station shall process these messages only once after each access handoff.

If ACCESS_PROBE_HO_S is equal to '0' and ACCESS_HO_S is equal to '1', the mobile station may monitor other Paging Channels which are in ACCESS_HO_LIST for T_{42m} seconds after the mobile station declares a loss of the original Paging Channel during an access attempt.

6.6.3.1.3.3 Access Probe Handoff

The mobile station is permitted to perform an access probe handoff when the mobile station is in the *Page Response Substate* or the *Mobile Station Origination Attempt Substate*.

The mobile station may perform an access probe handoff during an access attempt to a pilot in ACCESS_HO_LIST when the message being sent is the *Origination Message* or the *Page Response Message* if all of the following conditions hold:

- ACCESS_PROBE_HO_S is equal to '1',
- The mobile station is in the *Page Response Substate* or the *Mobile Station Origination Attempt Substate*, and
- The mobile station has performed fewer than (MAX_NUM_PROBE_HO_S + 1) access probe handoffs during the current access attempt.

The mobile station may also perform an access probe handoff during an access attempt to a pilot in ACCESS_HO_LIST when the message being sent is a message other than the *Origination Message* or the *Page Response Message* if all of the preceding conditions hold and ACC_PROBE_HO_OTHER_MSG_S is equal to '1'.

The mobile station may also perform an access probe handoff during an access attempt to a pilot not in ACCESS_HO_LIST when the message being sent is the *Origination Message* or the *Page Response Message* if all of the following conditions hold:

- ACC_HO_LIST_UPD_S is equal to '1',
- ACCESS_PROBE_HO_S is equal to '1',
- The new pilot is stronger than any pilot in ACCESS_HO_LIST,
- The new pilot has the corresponding ACCESS_HO_ALLOWED field in the NGHBR_REC equal to '1',
- Inclusion of the new pilot in ACCESS_HO_LIST does not cause the Access Channel message to exceed the maximum capsule size,

- 1 • Inclusion of the new pilot in ACCESS_HO_LIST does not cause the number of
- 2 members to exceed N_{13m} .
- 3 • The mobile station is in the *Page Response Substate* or the *Mobile Station Origination*
- 4 *Attempt Substate*, and
- 5 • The mobile station has performed fewer than $(MAX_NUM_PROBE_HO_S + 1)$ access
- 6 probe handoffs during the current access attempt.

7 The mobile station may also perform an access probe handoff during an access attempt to a
 8 pilot in ACCESS_HO_LIST when the message being sent is a message other than the
 9 *Origination Message* or the *Page Response Message* if all of the preceding conditions hold
 10 and ACC_PROBE_HO_OTHER_MSG_S is equal to '1'.

11 If the above conditions are met, the mobile station may perform an access probe handoff
 12 when the mobile station declares a loss of the Paging Channel (see 6.4.3); the mobile
 13 station may also perform an access probe handoff after the TA timer expires (see
 14 6.6.3.1.1.1) and the mobile station declares an insufficiency of the Paging Channel.

15 Before the mobile station transmits an access probe to the new base station, the mobile
 16 station shall update the parameters based on the *System Parameters Message*, the *Access*
 17 *Parameters Message* and the *Extended System Parameters Message* on the associated new
 18 Paging Channel and process the parameters from the message (see 6.6.2.2.1, 6.6.2.2.2, and
 19 6.6.2.2.5). The mobile station shall update the parameters based on the *Neighbor List*
 20 *Message*, *Extended Neighbor List Message*, or the *General Neighbor List Message* on the
 21 associated new Paging Channel and process the parameters from the message (see
 22 6.6.2.2.3, 6.6.2.2.7, and 6.6.2.2.8). If the mobile station receives a *Global Service*
 23 *Redirection Message* (see 6.6.2.2.6) which directs the mobile station away from the new
 24 base station, the mobile station shall not access the new base station. The mobile station
 25 shall process these messages only once per access sub-attempt during an access attempt.

26 If the mobile station performs an access probe handoff, the mobile station shall restart the
 27 access attempt probe sequence number on the new pilot, starting with the first probe of the
 28 first probe sequence of the access sub-attempt. The mobile station shall not reset its
 29 access probe handoff count until the access attempt ends.

30 The mobile station shall abort the access attempt if the length of the message to be sent
 31 exceeds MAX_CAP_SIZE of the new base station. The mobile station may monitor other
 32 Paging Channels which are in ACCESS_HO_LIST for T_{42m} seconds.

33 6.6.3.1.4 System Access State Exit Procedures

34 Upon exiting the *System Access State*, the mobile station shall abort any access attempt in
 35 progress and discard the associated message. The mobile station shall then disable the
 36 *System Access State* timer.

37 6.6.3.1.5 Access Channel Address Composition

38 When in the *System Access State*, the mobile station shall determine the type of address to
 39 use for all Access Channel messages as follows (see 6.7.1.3.1.1):

- 1 • The mobile station shall set MSID_TYPE equal to '000' and shall use IMSI_O_S_s
2 equal to IMSI_M_S_p and the ESN as the mobile station identifier if
3 PREF_MSID_TYPE_s is equal to '00', and USE_TMSI_s is equal to '0'.
- 4 • The mobile station shall set MSID_TYPE to '001' and shall use the ESN as the
5 mobile station identifier if neither IMSI_M nor IMSI_T has been assigned to the
6 mobile station.
- 7 • The mobile station shall set MSID_TYPE to '010' and shall use the IMSI_O as the
8 mobile station identifier if the following conditions are met:
 - 9 – The mobile station has been assigned either an IMSI_T, or an IMSI_M, or both;
 - 10 – PREF_MSID_TYPE_s is equal to '10'; and
 - 11 – USE_TMSI_s is equal to '0' or all the bits of TMSI_CODE_{s-p} are equal to '1'.
- 12 • The mobile station shall set MSID_TYPE to '011' and shall use both the IMSI_O and
13 the ESN as the mobile station identifier if the following conditions are met:
 - 14 – The mobile station has been assigned either an IMSI_T, or an IMSI_M, or both;
 - 15 – PREF_MSID_TYPE_s is equal to '11'; and
 - 16 – USE_TMSI_s is equal to '0' or all the bits of TMSI_CODE_{s-p} are equal to '1'.
- 17 • The mobile station shall set MSID_TYPE to '101' and shall use the TMSI as the
18 mobile station identifier if the following conditions are met:
 - 19 – The mobile station has been assigned either an IMSI_T, or an IMSI_M, or both;
 - 20 – The bits of TMSI_CODE_{s-p} are not all equal to '1';
 - 21 – PREF_MSID_TYPE_s is equal to '10' or '11'; and
 - 22 – USE_TMSI_s is equal to '1'.

23 When the IMSI_O is used in the MSID field, the mobile station shall use the following
24 procedures:

- 25 • The mobile station shall set IMSI_CLASS to '0' and IMSI_CLASS_0_TYPE to '00' if all
26 of the following conditions are met:
 - 27 – The mobile station's IMSI_O is a class 0 IMSI,
 - 28 – IMSI_O_11_12_s is equal to IMSI_11_12_s, and
 - 29 – MCC_O_s is equal to MCC_s.
- 30 • The mobile station shall set IMSI_CLASS to '0' and IMSI_CLASS_0_TYPE to '01' if all
31 of the following conditions are met:
 - 32 – The mobile station's IMSI_O is a class 0 IMSI,
 - 33 – IMSI_O_11_12_s is not equal to IMSI_11_12_s, and
 - 34 – MCC_O_s is equal to MCC_s.
- 35 • The mobile station shall set IMSI_CLASS to '0' and IMSI_CLASS_0_TYPE to '10' if all
36 of the following conditions are met:

- 1 - The mobile station's IMSI_O is a class 0 IMSI,
- 2 - IMSI_O_11_12_S is equal to IMSI_11_12_S and
- 3 - MCC_O_S is not equal to MCC_S.
- 4 • The mobile station shall set IMSI_CLASS to '0' and IMSI_CLASS_0_TYPE to '11' if all
- 5 of the following conditions are met:
- 6 - The mobile station's IMSI_O is a class 0 IMSI,
- 7 - IMSI_O_11_12_S is not equal to IMSI_11_12_S, and
- 8 - MCC_O_S is not equal to MCC_S
- 9 • The mobile station shall set IMSI_CLASS to '1' and IMSI_CLASS_1_TYPE to '0' if all
- 10 of the following conditions are met:
- 11 - The mobile station's IMSI_O is a class 1 IMSI, and
- 12 - MCC_O_S is equal to MCC_S.
- 13 • The mobile station shall set IMSI_CLASS to '1' and IMSI_CLASS_1_TYPE to '1' if all
- 14 of the following conditions are met:
- 15 - The mobile station's IMSI_O is a class 1 IMSI, and
- 16 - MCC_O_S is not equal to MCC_S.

17 When the TMSI is used in the MSID field, the mobile station shall use the following
18 procedures (see 6.7.1.3.1.1):

- 19 • The mobile station shall set MSID_LEN to 4 and include all four octets of
- 20 TMSI_CODE_{S-p} if all of the following conditions are met:
- 21 - ASSIGNING_TMSI_ZONE_LEN_{S-p} is equal to TMSI_ZONE_LEN_S,
- 22 - The least significant ASSIGNING_TMSI_ZONE_LEN_{S-p} octets of
- 23 ASSIGNING_TMSI_ZONE_{S-p} are equal to TMSI_ZONE_S, and
- 24 - The most significant octet of TMSI_CODE_{S-p} is not equal to '00000000'.
- 25 • The mobile station shall set MSID_LEN to 3 and shall include the three least
- 26 significant octets of TMSI_CODE_{S-p} if all of the following conditions are met:
- 27 - ASSIGNING_TMSI_ZONE_LEN_{S-p} is equal to TMSI_ZONE_LEN_S,
- 28 - The least significant ASSIGNING_TMSI_ZONE_LEN_{S-p} octets of
- 29 ASSIGNING_TMSI_ZONE_{S-p} are equal to TMSI_ZONE_S,
- 30 - The most significant octet of TMSI_CODE_{S-p} is equal to '00000000', and
- 31 - The next most significant octet of TMSI_CODE_{S-p} is not equal to '00000000'.
- 32 • The mobile station shall set MSID_LEN to 2 and shall include the two least
- 33 significant octets of TMSI_CODE_{S-p} if all of the following conditions are met:
- 34 - ASSIGNING_TMSI_ZONE_LEN_{S-p} is equal to TMSI_ZONE_LEN_S,

- 1 - The least significant ASSIGNING_TMSI_ZONE_LEN_{s-p} octets of
- 2 ASSIGNING_TMSI_ZONE_{s-p} are equal to TMSI_ZONE_s, and
- 3 - The two most significant octets of TMSI_CODE_{s-p} are both equal to '00000000'.
- 4 • The mobile station shall set MSID_LEN to 4 + ASSIGNING_TMSI_ZONE_LEN_{s-p} and
- 5 shall include the ASSIGNING_TMSI_ZONE_LEN_{s-p} least significant octets of
- 6 ASSIGNING_TMSI_ZONE_{s-p} plus all four octets of TMSI_CODE_{s-p} if the following
- 7 condition is met:
- 8 - ASSIGNING_TMSI_ZONE_LEN_{s-p} is not equal to TMSI_ZONE_LEN_s, or
- 9 - The least significant ASSIGNING_TMSI_ZONE_LEN_{s-p} octets of
- 10 ASSIGNING_TMSI_ZONE_{s-p} are not equal to TMSI_ZONE_s.

11 6.6.3.1.6 Full-TMSI Timer

12 Whenever the mobile station sends its full TMSI, the mobile station enables a timer, called

13 the full-TMSI timer. If the full-TMSI timer expires, the mobile station deletes the TMSI by

14 setting all of the bits in the TMSI_CODE_{s-p} field to '1'.

15 The mobile station shall maintain the full-TMSI timer. The mobile station shall provide a

16 means for enabling or disabling the full-TMSI timer.

17 If the mobile station sends a message with an address including the

18 ASSIGNING_TMSI_ZONE_{s-p} and the full-TMSI timer is disabled, the mobile station shall

19 enable the full-TMSI timer with a duration equal to $T_{69m} + 2.56 \times 2^i$ seconds where i is

20 equal to SLOT_CYCLE_INDEX_s.

21 6.6.3.1.7 Reporting Pilots

22 The mobile station assists the base station in the Traffic Channel assignment process by

23 reporting the pilot strength of the pilot in the mobile station's Paging Channel Active Set

24 (see 6.6.3.1.3.1). The mobile station can report other pilots on the same frequency using

25 ACCESS_HO_LIST and OTHER_REPORTED_LIST.

26 6.6.3.1.7.1 Generation of the Initial Access Handoff List

27 ACCESS_HO_LIST is created immediately before transmitting the first access probe after

28 entering the *System Access State*. When it is created, ACCESS_HO_LIST is defined as the

29 set of pilots for which the following apply:

- 30 • The strength of all members exceeds T_{ADD} .
- 31 • Each member other than the Active Set pilot has the corresponding
- 32 ACCESS_HO_ALLOWED field in the NGHBR_REC equal to '1'.
- 33 • Includes the Active Set pilot that the mobile station monitors when the mobile
- 34 station enters the *System Access State*.
- 35 • As a list, meets the following sizing conditions:
- 36 - All members can be contained in the Access Channel message without exceeding
- 37 the maximum capsule size.

- The number of members shall not exceed N_{13m} .

If more than one set of pilots exist that meet the above criteria, the mobile station shall include in the initial ACCESS_HO_LIST the set of pilots that meet the above criteria and whose members have the greatest pilot strength.

6.6.3.1.7.2 Update of the Access Handoff List

When the mobile station performs an access probe handoff to a pilot which was not previously included in ACCESS_HO_LIST (see 6.6.3.1.3.3), it adds the pilot to ACCESS_HO_LIST.

The mobile station can add one or more new pilots other than the Active Set pilot to ACCESS_HO_LIST before transmitting an access probe if ACCESS_HO_LIST_UPD_s is equal to '1'.

When it is updated before transmitting a subsequent access probe, ACCESS_HO_LIST is defined as the set of pilots for which the following apply:

- The strength of all members to which access probes have not been transmitted exceeds T_ADD.
- Each member other than the pilot to which the first access probe in the System Access State was transmitted has the corresponding ACCESS_HO_ALLOWED field in the NGHBR_REC equal to '1'.
- Includes the Active Set pilot to which the next access probe will be transmitted.
- Includes all pilots to which access probes have been transmitted since entering the System Access State.
- As a list, meets the following sizing conditions:
 - All members can be contained in the Access Channel message without exceeding the maximum capsule size.
 - The number of members shall not exceed N_{13m} .

If more than one set of pilots exist, excluding members to which access probes have been transmitted since transmitting the first access probe in the System Access State, that meet the above criteria, the mobile station shall include in ACCESS_HO_LIST a set of pilots that meet the above criteria, excluding members to which access probes have been transmitted since transmitting the first access probe in the System Access State, and whose members have the greatest pilot strength.

6.6.3.1.7.3 Generation of the Other Reported List

OTHER_REPORTED_LIST is defined as the set of pilots for which the following apply:

- The strength of all members exceeds T_ADD.
- No member is included in ACCESS_HO_LIST.
- All members can be contained in the Access Channel message without exceeding the maximum capsule size.

- 1 • Has a dynamic number of members which may change for any access probe of an
- 2 access attempt.
- 3 • The number of members shall not exceed N_{13m} minus the number of pilots in
- 4 ACCESS_HO_LIST.

5 If more than one set of pilots exist that meet the above criteria, the mobile station shall
 6 include in OTHER_REPORTED_LIST the set of pilots that meets the above criteria and
 7 whose members have the greatest pilot strength.

8 6.6.3.1.7.4 Update of the Other Reported List

9 Before transmitting each access probe, the mobile station shall generate
 10 OTHER_REPORTED_LIST according to section 6.6.3.1.7.3, using the latest pilot strength
 11 information available from its searcher element (see 6.2.2.1). If the mobile station updates
 12 ACCESS_HO_LIST before transmitting an access probe, it shall update
 13 OTHER_REPORTED_LIST after updating ACCESS_HO_LIST.

14 6.6.3.1.7.5 Setting of Pilot Reporting Fields in Access Channel Messages

15 The mobile station shall report the pilot strength of the pilot in the mobile station's Paging
 16 Channel Active Set in all Access Channel messages except the *Status Response Message*. If
 17 PILOT_REPORT_s is equal to '1', the mobile station shall report other pilots which are in
 18 ACCESS_HO_LIST and OTHER_REPORTED_LIST in all Access Channel messages. If
 19 PILOT_REPORT_s is equal to '0', the mobile station shall report other pilots which are in
 20 ACCESS_HO_LIST and OTHER_REPORTED_LIST only in the *Origination Message* and in
 21 the *Page Response Message*.

22 The mobile station shall compute the strength of a pilot as specified in 6.6.6.2.2. The
 23 mobile station shall compute the PILOT_PN_PHASE as specified in 6.6.6.2.4. For the pilot
 24 in the Active Set, the mobile station shall include ACTIVE_PILOT_STRENGTH in Access
 25 Channel messages. For additional reported pilots, the mobile station shall include the
 26 PILOT_STRENGTH and PILOT_PN_PHASE in Access Channel messages. The mobile station
 27 shall set ACCESS_HO_EN to '1' for each additional pilot which is included in
 28 ACCESS_HO_LIST (see 6.7.1.3.1.3).

29 The mobile station shall set ACCESS_ATTEMPTED for each reported pilot to '1' if at least
 30 one access probe of the access attempt has been transmitted to that pilot; otherwise, the
 31 mobile station shall set this field to '0'. If the mobile station transmits more than one
 32 access probe to a pilot, the mobile station shall report that pilot only once in Access
 33 Channel messages.

34 The mobile station should evaluate the identities and strengths of pilots being reported for
 35 subsequent Access Channel probes. The mobile station should update
 36 ACTIVE_PILOT_STRENGTH of the pilot in the Active Set. The mobile station should update
 37 PILOT_STRENGTH and PILOT_PN_PHASE fields of all other pilots in ACCESS_HO_LIST,
 38 and PILOT_STRENGTH and PILOT_PN_PHASE fields of pilots in OTHER_REPORTED_LIST
 39 and the NUM_ADD_PILOTS field for subsequent Access Channel probes accordingly.

40 The mobile station shall use the same MSG_SEQ for each access probe of an Access
 41 Attempt.

The mobile station shall indicate the first accessed pilot and the previous accessed pilot to which an access probe was transmitted. The first accessed pilot is the pilot to which the first access probe in the *System Access State* was transmitted. The previous accessed pilot is the pilot to which an access probe was transmitted immediately prior to the pilot in the current Active Set (see 6.7.1.3.1.3).

6.6.3.2 Update Overhead Information Substate

In this substate, the mobile station monitors the Paging Channel until it has received the current configuration messages. The mobile station compares sequence numbers to determine whether all of the configuration messages are up-to-date. To make sure it has the latest access parameters, the mobile station receives at least one message containing the ACC_MSG_SEQ field (except in case of a page response, since the initiating *General Page Message* contains ACC_MSG_SEQ), and waits, if necessary, for an *Access Parameters Message*.

Upon entering the *Update Overhead Information Substate*, the mobile station shall set the *System Access State* timer to a value of T_{41m} seconds. The mobile station shall set PAGED to NO.

If the *System Access State* timer expires while in this substate, the mobile station shall enter the *System Determination Substate* of the *Mobile Station Initialization State* with a system lost indication (see 6.6.1.1).

While in the *Update Overhead Information Substate*, the mobile station shall monitor the Paging Channel. If the mobile station declares a loss of the Paging Channel (see 6.4.3), the mobile station shall perform the following:

- If $PACA_S$ is equal to enabled, the mobile station shall set $PACA_S$ to disabled and $PACA_CANCEL$ to 0, shall disable the $PACA$ state timer, and should indicate to the user that the $PACA$ call has been canceled.
- The mobile station shall declare an access attempt failure and update its registration variables as specified in 6.6.5.5.3.2.
- The mobile station shall enter the *Mobile Station Idle State*.

If $PACA_S$ is equal to enabled, the mobile station shall set $PACA_CANCEL$ to '1' when the user directs the mobile station to cancel a $PACA$ call.

If the mobile station receives any of the following messages, it shall process the message as follows:

1. *System Parameters Message*: The mobile station shall process the parameters from the message (see 6.6.2.2.1).
2. *Access Parameters Message*: The mobile station shall process the parameters from the message (see 6.6.2.2.2).
3. *Neighbor List Message*: The mobile station shall process the parameters from the message (see 6.6.2.2.3).
4. *CDMA Channel List Message*: The mobile station shall process the parameters from the message (see 6.6.2.2.4).

- 1 5. *Extended System Parameters Message*: The mobile station shall process the
2 parameters from the message (see 6.6.2.2.5).
- 3 6. *Global Service Redirection Message*: The mobile station shall process the parameters
4 from the message (see 6.6.2.2.6).
- 5 7. *Extended Neighbor List Message*: The mobile station shall process the parameters
6 from the message (see 6.6.2.2.7).
- 7 8. *General Neighbor List Message*: The mobile station shall process the parameters
8 from the message (see 6.6.2.2.8).
- 9 9. *Lock Until Power-Cycled Order*: If the ADDRESS field matches the corresponding
10 mobile station identification data, the mobile station shall record the reason for the
11 *Lock Until Power-Cycled Order* in the mobile station's semi-permanent memory
12 (LCKRSN_P_{s-p} equals the least-significant four bits of ORDQ_r). The mobile station
13 should notify the user of the locked condition. The mobile station shall then enter
14 the *System Determination Substate* of the *Mobile Station Initialization State* with a
15 lock indication (see 6.6.1.1), and shall not enter the *System Access State* again until
16 after the next mobile station power-up or until it has received an *Unlock Order*. This
17 requirement shall take precedence over any other mobile station requirement
18 specifying entry to the *System Access State*.
- 19 10. *General Page Message*: If CURR_ACC_MSG_SEQ is equal to NULL, the mobile
20 station shall set CURR_ACC_MSG_SEQ to ACC_MSG_SEQ_r. The mobile station
21 shall compare CONFIG_MSG_SEQ_s to CONFIG_MSG_SEQ_r. If the comparison
22 results in a mismatch, the mobile station shall set CONFIG_MSG_SEQ_s to
23 CONFIG_MSG_SEQ_r. The mobile station may ignore the rest of the message. If this
24 substate was not entered with an origination or page response indication, the
25 mobile station may also determine whether there is a page match. If the mobile
26 station attempts to determine whether there is a page match, it shall use the
27 procedure as defined in 6.6.2.3. If a match is declared, the mobile station shall set
28 PAGED to YES.

29 If the mobile station receives a message which is not included in the above list, the mobile
30 station shall ignore the message.

31 When the stored configuration parameters are current (see 6.6.2.2) and
32 CURR_ACC_MSG_SEQ and ACC_MSG_SEQ_s are equal and are not NULL, the mobile
33 station shall disable the *System Access State* timer and shall do one of the following:

- 34 • If PAGED is equal to YES, the mobile station shall determine whether the message
35 resulting in the page match was received on the current Paging Channel. If the
36 message was received on the current Paging Channel, the mobile station shall enter
37 the *Page Response Substate*; otherwise, the mobile station shall enter the *Mobile*
38 *Station Idle State*.

- 1 • If this substate was entered with a page response indication and the mobile station
2 has not performed an access entry handoff, the mobile station shall determine
3 whether the message resulting in the page match was received on the current
4 Paging Channel. If the message was received on the current Paging Channel, the
5 mobile station shall enter the *Page Response Substate*; otherwise, the mobile station
6 shall enter the *Mobile Station Idle State*.
- 7 • If this substate was entered with a page response indication and the mobile station
8 has performed an access entry handoff, the mobile station shall enter the *Page*
9 *Response Substate*.
- 10 • If this substate was entered with a page response retransmission indication, the
11 mobile station shall enter the *Page Response Substate*.
- 12 • If this substate was entered with an origination indication, the mobile station shall
13 enter the *Mobile Station Origination Attempt Substate* with an origination indication.
- 14 • If this substate was entered with a PACA response indication, the mobile station
15 shall enter the *Mobile Station Origination Attempt Substate* with a PACA response
16 indication.
- 17 • If this substate was entered with an order/message response indication and the
18 mobile station has not performed an access entry handoff, the mobile station shall
19 determine whether the message resulting in the response was received on the
20 current Paging Channel. If the message was received on the current Paging
21 Channel, the mobile station shall enter the *Mobile Station Order/Message Response*
22 *Substate*; otherwise, the mobile station shall discard the response and enter the
23 *Mobile Station Idle State*.
- 24 • If this substate was entered with an order/message response indication and the
25 mobile station has performed an access entry handoff, the mobile station shall enter
26 the *Mobile Station Order/Message Response Substate*.
- 27 • If this substate was entered with a registration indication, the mobile station shall
28 enter the *Registration Access Substate*.
- 29 • If this substate was entered with a message transmission indication, the mobile
30 station shall enter the *Mobile Station Message Transmission Substate*.
- 31 • If this substate was entered with a PACA cancel indication, the mobile station shall
32 enter the *PACA Cancel Substate*.

33 6.6.3.3 Page Response Substate

34 In this substate, the mobile station sends a *Page Response Message* in response to a
35 *General Page Message* from a base station. If a base station responds to the *Page Response*
36 *Message* with an authentication request, the mobile station responds in this substate.

37 Upon entering the *Page Response Substate*, the mobile station shall send a *Page Response*
38 *Message*, using the access procedures specified in 6.6.3.1.1.2. If message authentication is
39 enabled (see 6.3.12.1), the mobile station shall calculate the values of the AUTHR and
40 RANDC fields using the current value of RAND_S.

While in this substate, the mobile station shall monitor the Paging Channel. The mobile station may perform an access probe handoff or access handoff as described in 6.6.3.1.3.2 and 6.6.3.1.3.3. If the mobile station declares a loss of the Paging Channel (see 6.4.3) during an access attempt, the mobile station may perform an access probe handoff; otherwise, it shall declare an access attempt failure and shall perform the following actions:

- The mobile station shall update its registration variables as specified in 6.6.5.5.3.2,
- The mobile station shall set SYS_PAR_MSG_SEQ_s and ACC_MSG_SEQ_s to NULL,
- If PACA_s is equal to enabled, the mobile station shall set PACA_s to disabled and PACA_CANCEL to '0', shall disable the PACA state timer, and should indicate to the user that the PACA call has been canceled.
- The mobile station shall disable its transmitter, and
- The mobile station shall enter the *Mobile Station Idle State*.

If the mobile station receives an acknowledgment to any message sent by the mobile station in this substate, the mobile station shall end the access attempt. After the access attempt is ended, the mobile station shall perform an access handoff if all of the following conditions hold:

- The mobile station declares a loss of the Paging Channel, and
- The mobile station is permitted to perform an access handoff (see 6.6.3.1.3.2), and there are pilots other than the active pilot in the access handoff list (see 6.6.3.1.3.2).

If the mobile station declares a loss of the Paging Channel and does not perform an access handoff, the mobile station shall perform the following:

- The mobile station shall set SYS_PAR_MSG_SEQ_s and ACC_MSG_SEQ_s to NULL,
- If PACA_s is equal to enabled, the mobile station shall set PACA_s to disabled and PACA_CANCEL to 0, shall disable the PACA state timer, and should indicate to the user that the PACA call has been canceled,
- The mobile station shall disable its transmitter, and
- The mobile station shall enter the *Mobile Station Idle State*.

If PACA_s is equal to enabled, the mobile station shall set PACA_CANCEL to '1' when the user directs the mobile station to cancel a PACA call.

If the access attempt for the *Page Response Message* ends with the receipt of an acknowledgment from a base station, the mobile station shall update its registration variables with respect to the first base station to which an access probe was sent after entering the *System Access State* as specified in 6.6.5.5.3.1.

If the *System Access State* timer expires while in this substate, the mobile station shall perform the following:

- If PACA_s is equal to enabled, the mobile station shall set PACA_s to disabled and PACA_CANCEL to '0', shall disable the PACA state timer, and should indicate to the user that the PACA call has been canceled.

- The mobile station shall set SYS_PAR_MSG_SEQ_s and ACC_MSG_SEQ_s to NULL, and shall enter the *Mobile Station Idle State*.

The mobile station shall set and disable the *System Access State* timer as follows:

- The mobile station shall disable the timer whenever it begins an access attempt.
- The mobile station shall set the timer to T_{42m} seconds whenever it ends an access attempt.
- The mobile station shall disable the timer whenever it exits the *System Access State*.

If a mobile station receives any message with a MSG_TYPE specified in Table 7.7.2.3-1 other than a *Channel Assignment Message* or an *Extended Channel Assignment Message* addressed to the mobile station, it shall process the ACK_SEQ and VALID_ACK fields of layer 2 as specified in 6.6.3.1.2. If, after processing the ACK_SEQ and VALID_ACK fields, an access attempt is still in progress, the mobile station shall ignore the ACK_REQ field of layer 2 and the layer 3 fields of the message; otherwise, the mobile station shall process the ACK_REQ field as described in 6.6.3.1.2 and the layer 3 fields of the message as described below.

If a mobile station receives a *Channel Assignment Message* or an *Extended Channel Assignment Message* addressed to the mobile station, the mobile station shall process the ACK_REQ field as described in 6.6.3.1.2 and shall process the message as described below.

If the mobile station has not received an acknowledgment from the base station before receiving the *Channel Assignment Message* or the *Extended Channel Assignment Message*, the mobile station shall end any access attempt in progress and shall update its registration variables with respect to the first base station to which an access probe was transmitted after entering the *System Access State*, as specified in 6.6.5.5.3.1.

If the mobile station is to exit the *System Access State* as a result of processing the layer 3 fields of a message requiring an acknowledgment, the mobile station shall send an acknowledgment (see 6.6.3.1.2) using the access procedures specified in 6.6.3.1.1 and then exit the *System Access State*.

The following directed messages and orders can be received. If any field value of the message or order is outside its permissible range, the mobile station may send a *Mobile Station Reject Order* with ORDQ equal to '00000100' (message field not in valid range).

1. *Authentication Challenge Message*: The mobile station shall respond to the message as specified in 6.3.12.1.5, regardless of the value of AUTH_s, using the access procedures specified in 6.6.3.1.1.2.
2. *Base Station Challenge Confirmation Order*: The mobile station shall respond to the message as specified in 6.3.12.1.9, using the access procedures specified in 6.6.3.1.1.2.
3. *Channel Assignment Message*: The mobile station shall process the message as follows:
 - If ASSIGN_MODE_r equals '000', the mobile station shall perform the following actions:

- The mobile station shall store the frame offset ($FRAME_OFFSET_S = FRAME_OFFSET_r$), the message encryption mode indicator ($ENCRYPT_MODE_S = ENCRYPT_MODE_r$), and, if $FREQ_INCL_r$ equals '1', the frequency assignment ($CDMACH_S = CDMA_FREQ_r$).
- The mobile station shall set $SERV_NEG_S$ to disabled.
- If $PACA_S$ is equal to enabled, the mobile station shall set $PACA_S$ to disabled and $PACA_CANCEL$ to '0', shall disable the PACA state timer, and should indicate to the user that the PACA call has been canceled.
- The mobile station shall initialize $CODE_CHAN_LIST$ as described in 6.6.8.
- The mobile station shall enter the *Traffic Channel Initialization Substate* of the *Mobile Station Control on the Traffic Channel State*.
- If $ASSIGN_MODE_r$ equals '001', the mobile station shall perform the following actions:
 - If the message requires an acknowledgment, the mobile station shall send an acknowledgment (see 6.6.3.1.2) using the access procedures specified in 6.6.3.1.1. Then, if $FREQ_INCL_r$ equals '1', the mobile station shall set $CDMACH_S = CDMA_FREQ_r$, tune to the new frequency assignment, and measure the strength of each pilot listed in the assignment using the Neighbor Set search procedures specified in 6.6.6.2.1 and 6.6.6.2.2.
 - The mobile station shall set $CONFIG_MSG_SEQ_S$ and $ACC_MSG_SEQ_S$ to NULL (see 6.6.2.2) and shall set $PILOT_PN_S$ to the pilot PN sequence offset of the strongest pilot in the list ($PILOT_PN_r$).
 - If the mobile station has not stored configuration parameters for the Primary Paging Channel of the new base station, or if the stored information is not current (see 6.6.2.2), the mobile station shall set $SYS_PAR_MSG_SEQ_S$, $NGHBR_LST_MSG_SEQ_S$, $EXT_NGHBR_LST_MSG_SEQ_S$, $GEN_NGHBR_LIST_MSG_SEQ_S$, $CHAN_LST_MSG_SEQ_S$, $EXT_SYS_PAR_MSG_SEQ_S$, and $GLOB_SERV_REDIR_MSG_SEQ_S$ to NULL.
 - The mobile station shall set $PAGE_CHAN_S$ to '1' and $PAGECH_S$ to the Primary Paging Channel. The mobile station shall then begin monitoring the Primary Paging Channel of the selected base station.
 - If $RESPOND_r$ is equal to '1', the mobile station shall enter the *Update Overhead Information Substate* with a page response retransmission indication within T_{34m} seconds after receiving the *Channel Assignment Message*.
 - If $RESPOND_r$ is equal to '0', the mobile station shall enter the *Mobile Station Idle State* within T_{34m} seconds after receiving the *Channel Assignment Message*.
- If $ASSIGN_MODE_r$ equals '010', the mobile station shall perform the following actions:

- 1 - If the mobile station does not support analog operation in the requested
2 band class, the mobile station shall send a *Mobile Station Reject Order* with
3 ORDQ field set to '00000110' (capability not supported by the mobile station)
4 and shall remain in the *Page Response Substate*.
- 5 - If the mobile station supports analog operation in the requested band class,
6 the mobile station shall perform the following actions:
 - 7 + If $USE_ANALOG_SYS_r$ equals '1', the mobile station shall set $SERVSYS_s$
8 to SYS_A if $ANALOG_SYS_r$ is equal to '0', or shall set $SERVSYS_s$ to SYS_B
9 if $ANALOG_SYS_r$ is equal to '1'.
 - 10 + If $PACA_s$ is equal to enabled, the mobile station shall set $PACA_s$ to
11 disabled and $PACA_CANCEL$ to '0', shall disable the PACA state timer,
12 and should indicate to the user that the PACA call has been canceled.
 - 13 + If $RESPOND_r$ equals '0', the mobile station shall enter the analog
14 Initialization Task with a wait-for-page indication (see 2.6.1). If
15 $RESPOND_r$ equals '1', the mobile station shall enter the analog
16 Initialization Task with a page response indication (see 2.6.1).
- 17 • If $ASSIGN_MODE_r$ equals '011', the mobile station shall perform the following
18 actions:
 - 19 - If the mobile station does not support analog operation in the requested
20 band class, the mobile station shall send a *Mobile Station Reject Order* with
21 ORDQ field set to '00000110' (capability not supported by the mobile station)
22 and remain in the *Page Response Substate*.
 - 23 - If the mobile station supports analog operation in the requested band class:
 - 24 + If $PACA_s$ is equal to enabled, the mobile station shall set $PACA_s$ to
25 disabled and $PACA_CANCEL$ to '0', shall disable the PACA state timer,
26 and should indicate to the user that the PACA call has been canceled.
 - 27 + If the analog channel type is '00', the mobile station shall store the
28 system identification ($SID_s = SID_r$), voice mobile station attenuation code
29 ($VMAC_s = VMAC_r$), voice channel number ($ANALOG_CHAN_s =$
30 $ANALOG_CHAN_r$), SAT color code ($SCC_s = SCC_r$), and message
31 encryption mode indicator ($MEM_s = MEM_r$), shall set DTX_s to '00' and
32 shall enter the Confirm Initial Voice Channel Task (see 2.6.4.2) with a
33 page response indication.
 - 34 + If the analog channel type is not '00':

- o If the mobile station supports narrow analog mode, the mobile station shall store the system identification ($SID_S = SID_r$), voice mobile station attenuation code ($VMAC_S = VMAC_r$), voice channel number ($ANALOG_CHAN_S = ANALOG_CHAN_r$), message encryption mode indicator ($MEM_S = MEM_r$), analog channel type ($AN_CHAN_TYPE_S = AN_CHAN_TYPE_r$) and the digital SAT code ($DSCC_S = DSCC_MSB_r \times 4 + SCC_r$), shall set DTX_S to '00', and shall enter the Confirm Initial Narrow Analog Voice Channel Task (see 2.6.5.2A of IS-91) with a page response indication.
 - o If the mobile station does not support narrow analog mode, the mobile station shall send a *Mobile Station Reject Order* with the ORDQ field set to '00000110' (capability not supported by the mobile station) and the mobile station shall remain in the *Page Response Substate* of the *System Access State*.
- If $ASSIGN_MODE_r$ equals '100', the mobile station shall perform the following actions:
 - If $PACA_S$ is equal to enabled, the mobile station shall set $PACA_S$ to disabled and $PACA_CANCEL$ to '0', shall disable the PACA state timer, and should indicate to the user that the PACA call has been canceled.
 - If $GRANTED_MODE_r$ equals '00', and the multiplex option and rate set combination specified in the DEFAULT_CONFIG field is not supported by the mobile station, the mobile station shall send a *Mobile Station Reject Order* with ORDQ field set to '00000110' (capability not supported by the mobile station) and remain in the *Page Response Substate*.
 - If $FREQ_INCL_r$ equals '0', the mobile station shall perform the following actions:
 - + The mobile station shall store the frame offset ($FRAME_OFFSET_S = FRAME_OFFSET_r$), the message encryption mode indicator ($ENCRYPT_MODE_S = ENCRYPT_MODE_r$), the granted mode ($GRANTED_MODE_S = GRANTED_MODE_r$), and default configuration ($DEFAULT_CONFIG_S = DEFAULT_CONFIG_r$).
 - + The mobile station shall set $SERV_NEG_S$ to enabled.
 - + The mobile station shall initialize CODE_CHAN_LIST as described in 6.6.8 and shall then enter the *Traffic Channel Initialization Substate* of the *Mobile Station Control on the Traffic Channel State*.
 - If $FREQ_INCL_r$ equals '1', the mobile station shall perform the following actions:
 - + If the band class is not supported by the mobile station, the mobile station shall send a *Mobile Station Reject Order* with ORDQ field set to '00000110' (capability not supported by the mobile station) and shall remain in the *Page Response Substate*.

- 1 + If the band class is supported by the mobile station, the mobile station
2 shall perform the following actions:
 - 3 o The mobile station shall store the frame offset ($FRAME_OFFSET_S =$
4 $FRAME_OFFSET_r$), the message encryption mode indicator
5 ($ENCRYPT_MODE_S = ENCRYPT_MODE_r$), the bypass indicator
6 ($BYPASS_ALERT_ANSWER_S = BYPASS_ALERT_ANSWER_r$), the
7 granted mode ($GRANTED_MODE_S = GRANTED_MODE_r$), the default
8 configuration ($DEFAULT_CONFIG_S = DEFAULT_CONFIG_r$), the band
9 class ($CDMABAND_S = BAND_CLASS_r$), and the frequency assignment
10 ($CDMACH_S = CDMA_FREQ_r$).
 - 11 o The mobile station shall initialize $CODE_CHAN_LIST$ as described in
12 6.6.8, and shall set $SERV_NEG_S$ to enabled.
 - 13 o The mobile station shall then tune to the new frequency assignment
14 and shall enter the *Traffic Channel Initialization Substate* of the
15 *Mobile Station Control on the Traffic Channel State*.
- 16 • If $ASSIGN_MODE_r$ equals '101', the mobile station shall perform the following
17 actions:
 - 18 - If $FREQ_INCL_r$ equals '0', the mobile station shall perform the following
19 actions:
 - 20 + If the message requires an acknowledgment, the mobile station shall
21 send an acknowledgment (see 6.6.3.1.2) using the access procedures
22 specified in 6.6.3.1.1. Then, the mobile station shall set
23 $CONFIG_MSG_SEQ_S$ and $ACC_MSG_SEQ_S$ to NULL (see 6.6.2.2) and
24 shall set $PILOT_PN_S$ to the pilot PN sequence offset of the strongest pilot
25 in the list ($PILOT_PN_r$).
 - 26 + If the mobile station has not stored configuration parameters for the
27 Primary Paging Channel of the new base station, or if the stored
28 information is not current (see 6.6.2.2), the mobile station shall set
29 $SYS_PAR_MSG_SEQ_S$, $NGHBR_LST_MSG_SEQ_S$,
30 $EXT_NGHBR_LST_MSG_SEQ_S$, $GEN_NGHBR_LIST_MSG_SEQ_S$,
31 $CHAN_LST_MSG_SEQ_S$, $EXT_SYS_PAR_MSG_SEQ_S$, and
32 $GLOB_SERV_REDIR_MSG_SEQ_S$ to NULL.
 - 33 + The mobile station shall set $PAGE_CHAN_S$ to '1' and $PAGECH_S$ to the
34 Primary Paging Channel. The mobile station shall then begin monitoring
35 the Primary Paging Channel of the selected base station.
 - 36 + If $RESPOND_r$ is equal to '1', the mobile station shall enter the *Update*
37 *Overhead Information Substate* with a page response retransmission
38 indication within T_{34m} seconds after receiving the *Channel Assignment*
39 *Message* or, if ACK_REQ is equal to '1', after sending the
40 acknowledgment to the *Channel Assignment Message*.

- 1 + If RESPOND_r is equal to '0', the mobile station shall enter the *Mobile*
- 2 *Station Idle State* within T_{34m} seconds after receiving the *Channel*
- 3 *Assignment Message*, or, if ACK_REQ is equal to '1', after sending the
- 4 acknowledgment to the *Channel Assignment Message*.
- 5 - If FREQ_INCL_r equals '1', the mobile station shall perform the following
- 6 actions:
 - 7 + If the band class is not supported by the mobile station, the mobile
 - 8 station shall send a *Mobile Station Reject Order* with ORDQ field set to
 - 9 '00000110' (capability not supported by the mobile station) and shall
 - 10 remain in the *Page Response Substate*.
 - 11 + If the band class is supported by the mobile station, the mobile station
 - 12 shall perform the following actions:
 - 13 o If the message requires an acknowledgment, the mobile station shall
 - 14 send an acknowledgment (see 6.6.3.1.2) using the access procedures
 - 15 specified in 6.6.3.1.1. Then, the mobile station shall set CONFIG_MSG_SEQ_s
 - 16 and ACC_MSG_SEQ_s to NULL (see 6.6.2.2) and shall set PILOT_PN_s to the pilot PN sequence offset of the strongest pilot in the
 - 17 list (PILOT_PN_r).
 - 18 o If the mobile station has not stored configuration parameters for the
 - 19 Primary Paging Channel of the new base station, or if the stored
 - 20 information is not current (see 6.6.2.2), the mobile station shall set
 - 21 SYS_PAR_MSG_SEQ_s , $\text{NGHBR_LST_MSG_SEQ}_s$,
 - 22 $\text{EXT_NGHBR_LST_MSG_SEQ}_s$, $\text{GEN_NGHBR_LIST_MSG_SEQ}_s$,
 - 23 $\text{CHAN_LST_MSG_SEQ}_s$, $\text{EXT_SYS_PAR_MSG_SEQ}_s$, and
 - 24 $\text{GLOB_SERV_REDIR_MSG_SEQ}_s$ to NULL.
 - 25 o The mobile station shall store the band class ($\text{CDMABAND}_s =$
 - 26 BAND_CLASS_r) and the frequency assignment
 - 27 ($\text{CDMACH}_s = \text{CDMA_FREQ}_r$).
 - 28 o The mobile station shall set PAGE_CHAN_s to '1' and PAGECH_s to the
 - 29 Primary Paging Channel. The mobile station shall then begin
 - 30 monitoring the Primary Paging Channel of the selected base station..
 - 31 o If RESPOND_r is equal to '1', the mobile station shall enter the *Update*
 - 32 *Overhead Information Substate* with a page response retransmission
 - 33 indication within T_{34m} seconds after receiving the *Channel*
 - 34 *Assignment Message* or, if ACK_REQ is equal to '1', after sending the
 - 35 acknowledgment to the *Channel Assignment Message*.
 - 36 o If RESPOND_r is equal to '0', the mobile station shall enter the *Mobile*
 - 37 *Station Idle State* within T_{34m} seconds after receiving the *Channel*
 - 38 *Assignment Message*, or, if ACK_REQ is equal to '1', after sending the
 - 39 acknowledgment to the *Channel Assignment Message*.
 - 40 acknowledgment to the *Channel Assignment Message*.

4. Data Burst Message

5. *Extended Channel Assignment Message*: The mobile station shall process the message as follows:

- If ASSIGN_MODE_r equals '000', the mobile station shall perform the following actions:
 - If PACA_s is equal to enabled, the mobile station shall set PACA_s to disabled and PACA_CANCEL to '0', shall disable the PACA state timer, and should indicate to the user that the PACA call has been canceled.
 - If FREQ_INCL_r equals '0', the mobile station shall perform the following actions:
 - + The mobile station shall store the frame offset (FRAME_OFFSET_s = FRAME_OFFSET_r); the message encryption mode indicator (ENCRYPT_MODE_s = ENCRYPT_MODE_r); the bypass indicator (BYPASS_ALERT_ANSWER_s = BYPASS_ALERT_ANSWER_r); the granted mode (GRANTED_MODE_s = GRANTED_MODE_r); the default configuration (DEFAULT_CONFIG_s = DEFAULT_CONFIG_r); and the occurrences of PILOT_PN and PWR_COMB for each included member of the Active Set.
 - + The mobile station shall initialize CODE_CHAN_LIST as described in 6.6.8, and shall set SERV_NEG_s to enabled.
 - + The mobile station shall then enter the *Traffic Channel Initialization Substate* of the *Mobile Station Control on the Traffic Channel State*.
 - If FREQ_INCL_r equals '1', and the band class is not supported by the mobile station, the mobile station shall send a *Mobile Station Reject Order* with ORDQ field set to '00000110' (capability not supported by the mobile station) and remain in the *Page Response Substate*.
 - If FREQ_INCL_r equals '1', and the band class is supported by the mobile station, the mobile station shall perform the following actions:
 - + The mobile station shall store the frame offset (FRAME_OFFSET_s = FRAME_OFFSET_r); the message encryption mode indicator (ENCRYPT_MODE_s = ENCRYPT_MODE_r); the bypass indicator (BYPASS_ALERT_ANSWER_s = BYPASS_ALERT_ANSWER_r); the granted mode (GRANTED_MODE_s = GRANTED_MODE_r); the default configuration (DEFAULT_CONFIG_s = DEFAULT_CONFIG_r); the band class (CDMABAND_s = BAND_CLASS_r); the frequency assignment (CDMACH_s = CDMA_FREQ_r); and the occurrences of PILOT_PN and PWR_COMB_IND for each included member of the Active Set.
 - + The mobile station shall initialize CODE_CHAN_LIST as described in 6.6.8, and shall set SERV_NEG_s to enabled.
 - + The mobile station shall then tune to the new frequency assignment and shall enter the *Traffic Channel Initialization Substate* of the *Mobile Station Control on the Traffic Channel State*.

- 1 - If GRANTED_MODE_r equals '00', and the multiplex option and rate set
2 specified in the DEFAULT_CONFIG field is not supported by the mobile
3 station, the mobile station shall send a *Mobile Station Reject Order* with
4 ORDQ field set to '00000110' (capability not supported by the mobile station)
5 and shall remain in the *Page Response Substate*.
- 6 • If ASSIGN_MODE_r equals '001', the mobile station shall perform the following
7 actions:
 - 8 - If FREQ_INCL_r equals '0', the mobile station shall perform the following
9 actions:
 - 10 + If the message requires an acknowledgment, the mobile station shall
11 send an acknowledgment (see 6.6.3.1.2) using the access procedures
12 specified in 6.6.3.1.1. Then, the mobile station shall set
13 CONFIG_MSG_SEQ_s and ACC_MSG_SEQ_s to NULL (see 6.6.2.2) and
14 shall set PILOT_PN_s to the pilot PN sequence offset of the strongest pilot
15 in the list (PILOT_PN_r). If the mobile station has not stored configuration
16 parameters for the Primary Paging Channel of the new base station, or if
17 the stored information is not current (see 6.6.2.2), the mobile station
18 shall set SYS_PAR_MSG_SEQ_s, NGHBR_LST_MSG_SEQ_s,
19 EXT_NGHBR_LST_MSG_SEQ_s, GEN_NGHBR_LIST_MSG_SEQ_s,
20 CHAN_LST_MSG_SEQ_s, EXT_SYS_PAR_MSG_SEQ_s, and
21 GLOB_SERV_REDIR_MSG_SEQ_s to NULL.
 - 22 + The mobile station shall set PAGE_CHAN_s to '1' and PAGECH_s to the
23 Primary Paging Channel. The mobile station shall then begin monitoring
24 the Primary Paging Channel of the selected base station.
 - 25 + If RESPOND_r is equal to '1', the mobile station shall enter the *Update*
26 *Overhead Information Substate* with a page response retransmission
27 indication within T_{34m} seconds after receiving the *Extended Channel*
28 *Assignment Message* or, if ACK_REQ is equal to '1', after sending the
29 acknowledgment to the *Extended Channel Assignment Message*.
 - 30 + If RESPOND_r is equal to '0', the mobile station shall enter the *Mobile*
31 *Station Idle State* within T_{34m} seconds after receiving the *Extended*
32 *Channel Assignment Message*, or, if ACK_REQ is equal to '1', after
33 sending the acknowledgment to the *Extended Channel Assignment*
34 *Message*.
 - 35 - If FREQ_INCL_r equals '1', and the band class is not supported by the mobile
36 station, the mobile station shall send a *Mobile Station Reject Order* with
37 ORDQ field set to '00000110' (capability not supported by the mobile station)
38 and remain in the *Page Response Substate*.
 - 39 - If FREQ_INCL_r equals '1', and the band class is supported by the mobile
40 station, the mobile station shall perform the following actions:

- 1 + If the message requires an acknowledgment, the mobile station shall
2 send an acknowledgment (see 6.6.3.1.2) using the access procedures
3 specified in 6.6.3.1.1. Then, the mobile station shall set
4 CONFIG_MSG_SEQ_s and ACC_MSG_SEQ_s to NULL (see 6.6.2.2) and
5 shall set PILOT_PN_s to the pilot PN sequence offset of the strongest pilot
6 in the list (PILOT_PN_r).
- 7 + If the mobile station has not stored configuration parameters for the
8 Primary Paging Channel of the new base station, or if the stored
9 information is not current (see 6.6.2.2), the mobile station shall set
10 SYS_PAR_MSG_SEQ_s, NGHBR_LST_MSG_SEQ_s,
11 EXT_NGHBR_LST_MSG_SEQ_s, GEN_NGHBR_LST_MSG_SEQ_s,
12 CHAN_LST_MSG_SEQ_s, EXT_SYS_PAR_MSG_SEQ_s, and
13 GLOB_SERV_REDIR_MSG_SEQ_s to NULL.
- 14 + The mobile station shall store the band class (CDMABAND_s =
15 BAND_CLASS_r) and the frequency assignment
16 (CDMACH_s = CDMA_FREQ_r).
- 17 + The mobile station shall set PAGE_CHAN_s to '1' and PAGECH_s to the
18 Primary Paging Channel. The mobile station shall then begin monitoring
19 the Primary Paging Channel of the selected base station. If RESPOND_r is
20 equal to '1', the mobile station shall enter the *Update Overhead*
21 *Information Substate* with a page response retransmission indication
22 within T_{34m} seconds after receiving the *Extended Channel Assignment*
23 *Message* or, if ACK_REQ is equal to '1', after sending the
24 acknowledgment to the *Extended Channel Assignment Message*.
- 25 + If RESPOND_r is equal to '0', the mobile station shall enter the *Mobile*
26 *Station Idle State* within T_{34m} seconds after receiving the *Extended*
27 *Channel Assignment Message*, or, if ACK_REQ is equal to '1', after
28 sending the acknowledgment to the *Extended Channel Assignment*
29 *Message*.
- 30 • If ASSIGN_MODE_r equals '010', the mobile station shall perform the following
31 actions:
 - 32 - If the mobile station does not support analog operation in the requested
33 band class, the mobile station shall send a *Mobile Station Reject Order* with
34 ORDQ field set to '00000110' (capability not supported by the mobile station)
35 and remain in the *Page Response Substate*.
 - 36 - If the mobile station supports analog operation in the requested band class,
37 the mobile station shall perform the following actions:
 - 38 + If PACA_s is equal to enabled, the mobile station shall set PACA_s to
39 disabled and PACA_CANCEL to '0', shall disable the PACA state timer,
40 and should indicate to the user that the PACA call has been canceled.

- 1 + If $RESPOND_r$ equals '0', and $USE_ANALOG_SYS_r$ equals '1', the mobile
2 station shall set $SERVSYS_s$ to SYS_A if $ANALOG_SYS_r$ is equal to '0', or
3 set $SERVSYS_s$ to SYS_B if $ANALOG_SYS_r$ is equal to '1'. The mobile
4 station shall then enter the analog Initialization Task with a wait-for-
5 page indication (see 2.6.1).
- 6 + If $RESPOND_r$ equals '1', and $USE_ANALOG_SYS_r$ equals '1', the mobile
7 station shall set $SERVSYS_s$ to SYS_A if $ANALOG_SYS_r$ is equal to '0', or
8 set $SERVSYS_s$ to SYS_B if $ANALOG_SYS_r$ is equal to '1'. The mobile
9 station shall then enter the analog Initialization Task with a page
10 response indication (see 2.6.1).
- 11 + If $RESPOND_r$ equals '0', and $USE_ANALOG_SYS_r$ equals '0' the mobile
12 station shall enter the analog Initialization Task with a wait for page
13 indication (see 2.6.1).
- 14 + If $RESPOND_r$ equals '1', and $USE_ANALOG_SYS_r$ equals '0' the mobile
15 station shall enter the analog Initialization Task with a page response
16 indication (see 2.6.1).
- 17 • If $ASSIGN_MODE_r$ equals '011', the mobile station shall perform the following
18 actions:
 - 19 - If the mobile station does not support analog operation in the requested
20 band class, the mobile station shall send a *Mobile Station Reject Order* with
21 ORDQ field set to '00000110' (capability not supported by the mobile station)
22 and remain in the *Page Response Substate*.
 - 23 - If the mobile station supports analog operation in the requested band class,
24 and the analog channel type is '00', the mobile station shall store the system
25 identification ($SID_s = SID_r$), voice mobile station attenuation code ($VMAC_s =$
26 $VMAC_r$), voice channel number ($ANALOG_CHAN_s = ANALOG_CHAN_r$), SAT
27 color code ($SCC_s = SCC_r$), and message encryption mode indicator ($MEM_s =$
28 MEM_r), shall set DTX_s to '00', and shall enter the Confirm Initial Voice
29 Channel Task (see 2.6.4.2) with a page response indication. If $PACA_s$ is
30 equal to enabled, the mobile station shall set $PACA_s$ to disabled and
31 $PACA_CANCEL$ to '0', shall disable the PACA state timer, and should indicate
32 to the user that the PACA call has been canceled.

- 1 – If the mobile station supports analog operation in the requested band class,
2 the analog channel type is not '00', and the mobile supports narrow analog
3 mode, the mobile station shall store the system identification ($SID_S = SID_r$),
4 voice mobile station attenuation code ($VMAC_S = VMAC_r$), voice channel
5 number ($ANALOG_CHAN_S = ANALOG_CHAN_r$), message encryption mode
6 indicator ($MEM_S = MEM_r$), analog channel type ($AN_CHAN_TYPE_S =$
7 $AN_CHAN_TYPE_r$) and the digital SAT code ($DSCC_S = DSCC_MSB_r \times 4 +$
8 SCC_r), shall set DTX_S to '00', and shall enter the Confirm Initial Narrow
9 Analog Voice Channel Task (see 2.6.5.2A of IS-91) with a page response
10 indication. If $PACA_S$ is equal to enabled, the mobile station shall set $PACA_S$
11 to disabled and $PACA_CANCEL$ to '0', shall disable the PACA state timer, and
12 should indicate to the user that the PACA call has been canceled.
 - 13 • If $ASSIGN_MODE_r$ equals '011', the mobile station supports analog operation in
14 the requested band class, the analog channel type is not '00', and the mobile
15 station does not support narrow analog mode, the mobile station shall send a
16 *Mobile Station Reject Order* with the $ORDQ$ field set to '00000110' (capability not
17 supported by the mobile station) and the mobile station shall remain in the *Page*
18 *Response Substate* of the *System Access State*.
- 19 6. *Feature Notification Message*
- 20 7. *Local Control Order*
- 21 8. *Lock Until Power-Cycled Order*: The mobile station shall disable its transmitter and
22 record the reason for the *Lock Until Power-Cycled Order* in the mobile station's semi-
23 permanent memory ($LCKRSN_P_{S-p}$ equals the least significant four bits of $ORDQ_r$).
24 The mobile station should notify the user of the locked condition. The mobile
25 station shall enter the *System Determination Substate* of the *Mobile Station*
26 *Initialization State* with a lock indication (see 6.6.1.1), and shall not enter the
27 *System Access State* again until after the next mobile station power-up or until it
28 has received an *Unlock Order*. This requirement shall take precedence over any
29 other mobile station requirement specifying entry to the *System Access State*.
- 30 9. *Maintenance Required Order*: The mobile station shall record the reason for the
31 *Maintenance Required Order* in the mobile station's semi-permanent memory
32 ($MAINTRSN_{S-p}$ equals the least significant four bits of $ORDQ_r$). The mobile station
33 shall remain in the unlocked condition. The mobile station should notify the user of
34 the maintenance required condition.
- 35 10. *Registration Accepted Order*: If $ORDQ_r = '00000101'$, the mobile station shall set
36 $ROAM_INDI_S = ROAM_INDI_r$ and should display the roaming condition.
- 37 11. *Registration Rejected Order*: This order indicates that normal service is not available
38 on this system. The mobile station shall disable the full-TMSI timer. If the received
39 order specifies to delete the TMSI ($ORDQ = '00000100'$), the mobile station shall set
40 all the bits of the $TMSI_CODE_{S-p}$ to '1'. The mobile station shall enter the *System*
41 *Determination Substate* of the *Mobile Station Initialization State* with a registration
42 rejected indication (see 6.6.1.1).

12. *Release Order*: If NDSS_ORIG_S is equal to enabled, the mobile station shall set NDSS_ORIG_S to disabled, and should indicate to the user that the call origination has been canceled. The mobile station shall enter the *Mobile Station Idle State* or the *System Determination Substate* of the *Mobile Station Initialization State* with a release indication (see 6.6.1.1). If the mobile station enters the *Mobile Station Idle State*, and if PACA_S is equal to enabled, the mobile station shall set PACA_S to disabled and PACA_CANCEL to '0', shall disable the PACA state timer, and should indicate to the user that the PACA call has been canceled.
13. *Service Redirection Message*: The mobile station shall process the message as follows:
- If the mobile station is directed to an unsupported operation mode or band class, the mobile station shall respond with a *Mobile Station Reject Order* with ORDQ equal to '00000110' (message requires a capability that is not supported by the mobile station).
 - If DELETE_TMSI_r is equal to '1', the mobile station shall set all the bits of TMSI_CODE_{S-p} to '1'. The mobile station shall disable the full-TMSI timer.
 - The mobile station shall set RETURN_IF_FAIL_S = RETURN_IF_FAIL_r.
 - If RECORD_TYPE_r is equal to '00000000', the mobile station shall enter the *System Determination Substate* of the *Mobile Station Initialization State* with an NDSS off indication (see 6.6.1.1); otherwise, the mobile station shall store the redirection record received in the message as REDIRECT_REC_S and shall enter the *System Determination Substate* of the *Mobile Station Initialization State* with a redirection indication (see 6.6.1.1).
14. *SSD Update Message*: The mobile station shall respond to the message as specified in 6.3.12.1.9, using the access procedures specified in 6.6.3.1.1.2.
15. *Status Request Message*: The mobile station shall disable the *System Access State* timer and respond to the message using the access procedures specified in 6.6.3.1.1.2. If P_REV_IN_USE_S is less than or equal to three, the mobile station shall respond with a *Status Response Message*. If P_REV_IN_USE_S is greater than three, the mobile station shall respond with an *Extended Status Response Message*. If the message does not specify any qualification information (QUAL_INFO_TYPE_r is equal to '00000000'), the mobile station shall include the requested information records in the response. If the message specifies a band class (QUAL_INFO_TYPE_r is equal to '00000001'), the mobile station shall only include the requested information records for the specified band class (BAND_CLASS_r) in the response. If the message specifies a band class and an operating mode (QUAL_INFO_TYPE_r is equal to '00000010'), the mobile station shall only include the requested information records for the specified band class (BAND_CLASS_r) and operating mode (OP_MODE_r) in the response. If the message specifies a band class or a band class and an operating mode which is not supported by the mobile station, the mobile station shall send a *Mobile Station Reject Order* with ORDQ set to '00000110' (message requires a capability that is not supported by the mobile station). If the response to this message exceeds the allowable length, the mobile station shall send

a *Mobile Station Reject Order* with ORDQ set to '00001000' (response message would exceed the allowable length). If the message specifies an information record which is not supported by the mobile station for the specified band class and operating mode, the mobile station shall send a *Mobile Station Reject Order* with ORDQ set to '00001001' (information record is not supported for the specified band class and operating mode).

16. *TMSI Assignment Message*: The mobile station shall store the TMSI zone and code as follows:

- The mobile station shall store the length of the TMSI zone field by setting ASSIGNING_TMSI_ZONE_LEN_{s-p} to TMSI_ZONE_LEN_r;
- The mobile station shall store the assigning TMSI zone number by setting the ASSIGNING_TMSI_ZONE_LEN_{s-p} least significant octets of ASSIGNING_TMSI_ZONE_{s-p} to TMSI_ZONE_r, and
- The mobile station shall store the TMSI code by setting TMSI_CODE_{s-p} to TMSI_CODE_r.

The mobile station shall set the TMSI expiration time by setting TMSI_EXP_TIME_{s-p} to TMSI_EXP_TIME_r. The mobile station shall disable the full-TMSI timer. The mobile station shall then respond with a *TMSI Assignment Completion Message* within T_{56m} seconds.

17. *Any other message*: If the mobile station receives any other message with a MSG_TYPE specified in Table 7.7.2.3-1, it shall process all layer 2 fields of the message and shall ignore all other fields. The mobile station shall ignore all other messages.

If the mobile station performs an access probe handoff or access handoff and receives any of the following messages, it shall process the message as specified in 6.6.3.1.3.2 and 6.6.3.1.3.3:

1. *System Parameters Message*
2. *Access Parameters Message*
3. *Neighbor List Message*
4. *Extended System Parameters Message*
5. *Extended Neighbor List Message*
6. *General Neighbor List Message*

6.6.3.4 Mobile Station Order/Message Response Substate

In this substate, the mobile station sends a message that is a response to a message received from the base station. If the base station responds to the mobile station's message with an authentication request, the mobile station responds in this substate.

Upon entering the *Mobile Station Order/Message Response Substate*, the mobile station shall send the response message using the access procedures specified in 6.6.3.1.1.2.

While in this substate, the mobile station shall monitor the Paging Channel. If the mobile station declares a loss of the Paging Channel (see 6.4.3), the mobile station shall perform the following:

- If PACA_S is equal to enabled, the mobile station shall set PACA_S to disabled and PACA_CANCEL to '0', shall disable the PACA state timer, and should indicate to the user that the PACA call has been canceled.
- The mobile station shall declare an access attempt failure and update its registration variables as specified in 6.6.5.5.3.2.
- The mobile station shall disable its transmitter.
- The mobile station shall enter the *Mobile Station Idle State*.

If the mobile station receives an acknowledgment to any message sent by the mobile station in this substate, it shall end the access attempt, send an acknowledgment if required, send a response in this substate if required, and shall then enter the *Mobile Station Idle State*.

If PACA_S is equal to enabled, the mobile station shall set PACA_CANCEL to '1' when the user directs the mobile station to cancel a PACA call.

If a mobile station receives any message with a MSG_TYPE specified in Table 7.7.2.3-1 addressed to the mobile station, it shall process the ACK_SEQ and VALID_ACK fields of layer 2 as specified in 6.6.3.1.2. If, after processing the ACK_SEQ and VALID_ACK fields, an access attempt is still in progress, the mobile station shall ignore the ACK_REQ field of layer 2 and the layer 3 fields of the message; otherwise, the mobile station shall process the ACK_REQ field as described in 6.6.3.1.2 and the layer 3 fields of the message as described below.

If the mobile station is to exit the *System Access State* as a result of processing the layer 3 fields of a message requiring an acknowledgment, the mobile station shall send an acknowledgment (see 6.6.3.1.2) using the access procedures specified in 6.6.3.1.1 and then exit the *System Access State*.

The following directed messages and orders can be received. If any field value of the message or order is outside its permissible range, the mobile station may send a *Mobile Station Reject Order* with ORDQ equal to '00000100' (message field not in valid range).

1. *Authentication Challenge Message*: The mobile station shall respond to the message as specified in 6.3.12.1.5, regardless of the value of AUTH_S, using the access procedures specified in 6.6.3.1.1.2.
2. *Base Station Challenge Confirmation Order*: The mobile station shall respond to the message as specified in 6.3.12.1.9, using the access procedures specified in 6.6.3.1.1.2.
3. *Data Burst Message*
4. *Feature Notification Message*
5. *Local Control Order*
6. *Lock Until Power-Cycled Order*: The mobile station shall disable its transmitter and record the reason for the *Lock Until Power-Cycled Order* in the mobile station's semi-

- 1 permanent memory (LCKRSN_{S-p} equals the least significant four bits of ORDQ_r).
 2 The mobile station should notify the user of the locked condition. The mobile
 3 station shall enter the *System Determination Substate of the Mobile Station*
 4 *Initialization State* with a lock indication (see 6.6.1.1), and shall not enter the
 5 *System Access State* again until after the next mobile station power-up or until it
 6 has received an *Unlock Order*. This requirement shall take precedence over any
 7 other mobile station requirement specifying entry to the *System Access State*.
- 8 7. *Maintenance Required Order*: The mobile station shall record the reason for the
 9 *Maintenance Required Order* in the mobile station's semi-permanent memory
 10 (MAINTRSN_{S-p} equals the least significant four bits of ORDQ_r). The mobile station
 11 shall remain in the unlocked condition. The mobile station should notify the user of
 12 the maintenance required condition.
- 13 8. *Registration Accepted Order*: If ORDQ_r = '00000101', the mobile station shall set
 14 ROAM_IND_S = ROAM_IND_r and should display the roaming condition.
- 15 9. *Registration Rejected Order*: This order indicates that normal service is not available
 16 on this system. The mobile station shall disable the full-TMSI timer. If the received
 17 order specifies to delete the TMSI (ORDQ = '00000100'), the mobile station shall set
 18 all the bits of the TMSI_CODE_{S-p} to '1'. The mobile station shall enter the *System*
 19 *Determination Substate of the Mobile Station Initialization State* with a registration
 20 rejected indication (see 6.6.1.1).
- 21 10. *Service Redirection Message*: The mobile station shall process the message as
 22 follows:
- 23 • If the mobile station is directed to an unsupported operation mode or band
 24 class, the mobile station shall respond with a *Mobile Station Reject Order* with
 25 ORDQ equal to '00000110' (message requires a capability that is not supported
 26 by the mobile station).
 - 27 • If DELETE_TMSI_r is equal to '1', the mobile station shall set all the bits of
 28 TMSI_CODE_{S-p} to '1'. The mobile station shall disable the full-TMSI timer.
 - 29 • The mobile station shall set RETURN_IF_FAIL_S = RETURN_IF_FAIL_r.
 - 30 • If RECORD_TYPE_r is equal to '00000000', the mobile station shall enter the
 31 *System Determination Substate of the Mobile Station Initialization State* with an
 32 NDSS off indication (see 6.6.1.1); otherwise, the mobile station shall store the
 33 redirection record received in the message as REDIRECT_REC_S and shall enter
 34 the *System Determination Substate of the Mobile Station Initialization State* with a
 35 redirection indication (see 6.6.1.1).
- 36 11. *SSD Update Message*: The mobile station shall respond to the message as specified
 37 in 6.3.12.1.9, using the access procedures specified in 6.6.3.1.1.2.
- 38 12. *Status Request Message*: The mobile station shall disable the *System Access State*
 39 timer and respond to the message using the access procedures specified in
 40 6.6.3.1.1.2. If P_REV_IN_USE_S is less than or equal to three, the mobile station
 41 shall respond with a *Status Response Message*. If P_REV_IN_USE_S is greater than
 42 three, the mobile station shall respond with an *Extended Status Response Message*.

If the message does not specify any qualification information ($QUAL_INFO_TYPE_r$ is equal to '00000000'), the mobile station shall include the requested information records in the response. If the message specifies a band class ($QUAL_INFO_TYPE_r$ is equal to '00000001'), the mobile station shall only include the requested information records for the specified band class ($BAND_CLASS_r$) in the response. If the message specifies a band class and an operating mode ($QUAL_INFO_TYPE_r$ is equal to '00000010'), the mobile station shall only include the requested information records for the specified band class ($BAND_CLASS_r$) and operating mode (OP_MODE_r) in the response. If the message specifies a band class or a band class and an operating mode which is not supported by the mobile station, the mobile station shall send a *Mobile Station Reject Order* with $ORDQ$ set to '00000110' (message requires a capability that is not supported by the mobile station). If the response to this message exceeds the allowable length, the mobile station shall send a *Mobile Station Reject Order* with $ORDQ$ set to '00001000' (response message would exceed the allowable length). If the message specifies an information record which is not supported by the mobile station for the specified band class and operating mode, the mobile station shall send a *Mobile Station Reject Order* with $ORDQ$ set to '00001001' (information record is not supported for the specified band class and operating mode).

13. *TMSI Assignment Message*: The mobile station shall store the TMSI zone and code as follows:

- The mobile station shall store the length of the TMSI zone field by setting $ASSIGNING_TMSI_ZONE_LEN_{s-p}$ to $TMSI_ZONE_LEN_r$.
- The mobile station shall store the assigning TMSI zone number by setting the $ASSIGNING_TMSI_ZONE_LEN_{s-p}$ least significant octets of $ASSIGNING_TMSI_ZONE_{s-p}$ to $TMSI_ZONE_r$, and
- The mobile station shall store the TMSI code by setting $TMSI_CODE_{s-p}$ to $TMSI_CODE_r$.

The mobile station shall set the TMSI expiration time by setting $TMSI_EXP_TIME_{s-p}$ to $TMSI_EXP_TIME_r$. The mobile station shall disable the full-TMSI timer. The mobile station shall then respond with a *TMSI Assignment Completion Message* within T_{56m} seconds.

14. *Any other message*: If the mobile station receives any other message with a MSG_TYPE specified in Table 7.7.2.3-1, it shall process all layer 2 fields of the message and shall ignore all other fields. The mobile station shall ignore all other messages.

6.6.3.5 Mobile Station Origination Attempt Substate

In this substate, the mobile station sends an *Origination Message*. If the base station responds to the *Origination Message* with an authentication request, the mobile station responds in this substate.

Upon entering the *Mobile Station Origination Attempt Substate*, the mobile station shall perform the following:

- 1 • If the substate was entered with an origination indication, the mobile station shall
2 send the *Origination Message* as an Access Channel request using the access
3 procedures specified in 6.6.3.1.1.2.
- 4 • If the substate was entered with a PACA response indication, the mobile station
5 shall send the *Origination Message* as an Access Channel response using the access
6 procedures specified in 6.6.3.1.1.2. The mobile station shall include the dialed
7 digits from the previous origination attempt in the *Origination Message*.
- 8 • If the origination is a result of NDSS_ORIG_s being equal to enabled, the mobile
9 station shall include in the *Origination Message* the dialed digits recorded from the
10 previous origination attempt.
- 11 • The mobile station shall include in the *Origination Message* as many of the dialed
12 digits as possible without exceeding the message capsule size. When calculating the
13 number of dialed digits to be included in the *Origination Message*, the mobile station
14 shall assume the following if P_REV_IN_USE is greater than three:
 - 15 – The number of additional reported pilots (NUM_ADD_PILOTS) is equal to five
16 (see 6.6.3.1.7 and 6.7.1.3.1.3) so that up to five additional pilots may be
17 reported in any access probe, and
 - 18 – The number of alternative service option numbers (NUM_ALT_SO) is less than or
19 equal to the maximum alternative service option numbers
20 (MAX_NUM_ALT_SO_s).

21 The mobile station shall not change the number of dialed digits in the *Origination*
22 *Message* in subsequent access probes.

- 23 • If PACA_s is equal to enabled, the mobile station shall set the PACA_REORIG field of
24 the *Origination Message* to '1'; otherwise, the mobile station shall set the field to '0'.

25 While in this substate, the mobile station shall monitor the Paging Channel. The mobile
26 station may perform an access probe handoff or an access handoff as described in
27 6.6.3.1.3.2 and 6.6.3.1.3.3. If the mobile station declares a loss of the Paging Channel (see
28 6.4.3) during an access attempt, the mobile station may perform an access probe handoff;
29 otherwise, it shall declare an access attempt failure and shall perform the following:

- 30 • The mobile station shall set SYS_PAR_MSG_SEQ_s and ACC_MSG_SEQ_s to NULL.
- 31 • If PACA_s is equal to enabled, the mobile station shall set PACA_s to disabled and
32 PACA_CANCEL to '0', shall disable the PACA state timer, and should indicate to the
33 user that the PACA call has been canceled.
- 34 • If NDSS_ORIG_s is equal to enabled, the mobile station shall set NDSS_ORIG_s to
35 disabled, and should indicate to the user that the call origination is canceled.
- 36 • The mobile station shall update its registration variables as specified in 6.6.5.5.3.2.
- 37 • The mobile station shall disable its transmitter and enter the *Mobile Station Idle*
38 *State*.

1 If the mobile station receives an acknowledgment to any message sent by the mobile station
 2 in this substate, it shall end the access attempt. After the access attempt is ended, the
 3 mobile station shall perform an access handoff if all of the following conditions hold:

- 4 • The mobile station declares a loss of the Paging Channel,
- 5 • The mobile station is permitted to perform an access handoff (see 6.6.3.1.3.2) and
 6 there are pilots other than the active pilot in the access handoff list (see 6.6.3.1.3.2).

7 If the mobile station declares a loss of the Paging Channel and does not perform an access
 8 handoff, the mobile station shall perform the following:

- 9 • The mobile station shall set SYS_PAR_MSG_SEQ_s and ACC_MSG_SEQ_s to NULL.
- 10 • If PACA_s is equal to enabled, the mobile station shall set PACA_s to disabled and
 11 PACA_CANCEL to '0', shall disable the PACA state timer, and should indicate to the
 12 user that the PACA call has been canceled.
- 13 • If NDSS_ORIG_s is equal to enabled, the mobile station shall set NDSS_ORIG_s to
 14 disabled, and should indicate to the user that the call origination is canceled.
- 15 • The mobile station shall disable its transmitter and enter the *Mobile Station Idle*
 16 *State*.

17 If the access attempt for the *Origination Message* ends with the receipt of an
 18 acknowledgment from a base station, the mobile station shall update its registration
 19 variables with respect to the base station to which the first access probe was transmitted
 20 after entering the *System Access State* as specified in 6.6.5.5.3.1.

21 The mobile station shall set and disable the *System Access State* timer as follows:

- 22 • The mobile station shall disable the timer whenever it begins an access attempt.
- 23 • The mobile station shall set the timer to T_{42m} seconds whenever it ends an access
 24 attempt.
- 25 • The mobile station shall disable the timer whenever it exits the *System Access State*.

26 If the *System Access State* timer expires while in this substate, the mobile station shall
 27 perform the following:

- 28 • If PACA_s is equal to enabled, the mobile station shall set PACA_s to disabled and
 29 PACA_CANCEL to '0', shall disable the PACA state timer, and should indicate to the
 30 user that the PACA call has been canceled.
- 31 • If NDSS_ORIG_s is equal to enabled, the mobile station shall set NDSS_ORIG_s to
 32 disabled, and should indicate to the user that the call origination is canceled.
- 33 • The mobile station shall set SYS_PAR_MSG_SEQ_s and ACC_MSG_SEQ_s to NULL
 34 and enter the *Mobile Station Idle State*.

35 If the mobile station is directed by the user to disconnect the call, the mobile station shall
 36 perform the following actions:

- 37 • The mobile station shall abort any access attempt in progress.

- 1 • The mobile station shall send the *Release Order* (normal release) as a message
- 2 requiring acknowledgment using the access procedures specified in 6.6.3.1.1.2.
- 3 • After receiving the acknowledgment to the *Release Order*, the mobile station shall
- 4 only process the layer 2 fields and enter the *System Determination Substate* of the
- 5 *Mobile Station Initialization State* with a release indication (see 6.6.1.1).

6 If the mobile station is directed by the user to power off, the mobile station shall perform
7 the following actions:

- 8 • The mobile station shall abort any access attempt in progress.
- 9 • The mobile station shall send the *Release Order* (with power-down indication) as a
- 10 message requiring acknowledgment using the access procedures specified in
- 11 6.6.3.1.1.2.
- 12 • After receiving the acknowledgment to the *Release Order*, the mobile station shall
- 13 only process the layer 2 fields and perform power-down registration procedures (see
- 14 6.6.5.1.2).
- 15 • The mobile station may power off.

16 If a mobile station receives any message with a MSG_TYPE specified in Table 7.7.2.3-1
17 other than a *Channel Assignment Message* or an *Extended Channel Assignment Message*
18 addressed to the mobile station, it shall process the ACK_SEQ and VALID_ACK fields of
19 layer 2 as specified in 6.6.3.1.2. If, after processing the ACK_SEQ and VALID_ACK fields,
20 an access attempt is still in progress, the mobile station shall ignore the ACK_REQ field of
21 layer 2 and the layer 3 fields of the message; otherwise, the mobile station shall process the
22 ACK_REQ field as described in 6.6.3.1.2 and the layer 3 fields of the message as described
23 below.

24 If a mobile station receives a *Channel Assignment Message* or an *Extended Channel*
25 *Assignment Message* addressed to the mobile station, the mobile station shall process the
26 ACK_REQ field as described in 6.6.3.1.2 and shall process the message as described below.

27 If the mobile station has not received an acknowledgment from the base station before
28 receiving the *Channel Assignment Message* or the *Extended Channel Assignment Message*,
29 the mobile station shall end any access attempt in progress, and shall update its
30 registration variables with respect to the first base station to which an access probe was
31 transmitted after entering the *System Access State*, as specified in 6.6.5.5.3.1.

32 If the mobile station is to exit the *System Access State* as a result of processing the layer 3
33 fields of a message requiring an acknowledgment, the mobile station shall send an
34 acknowledgment (see 6.6.3.1.2) using the access procedures specified in 6.6.3.1.1 and then
35 exit the *System Access State*.

36 The following directed messages and orders can be received. If any field value of the
37 message or order is outside its permissible range, the mobile station may send a *Mobile*
38 *Station Reject Order* with ORDQ equal to '00000100' (message field not in valid range).

- 39 1. *Authentication Challenge Message*: The mobile station shall respond to the message
- 40 as specified in 6.3.12.1.5, regardless of the value of AUTH_S, using the access
- 41 procedures specified in 6.6.3.1.1.2.

2. *Base Station Challenge Confirmation Order*: The mobile station shall respond to the message as specified in 6.3.12.1.9, using the access procedures specified in 6.6.3.1.1.2.

3. *Channel Assignment Message*: The mobile station shall process the message as follows:

- If ASSIGN_MODE_r equals '000', the mobile station shall perform the following actions:
 - The mobile station shall store the frame offset (FRAME_OFFSET_s = FRAME_OFFSET_r), the message encryption mode indicator (ENCRYPT_MODE_s = ENCRYPT_MODE_r), and, if FREQ_INCL_r equals '1', the frequency assignment (CDMACH_s = CDMA_FREQ_r).
 - If PACA_s is equal to enabled, the mobile station shall set PACA_s to disabled and PACA_CANCEL to '0', shall disable the PACA state timer, and should indicate to the user that the PACA call is proceeding.
 - The mobile station shall initialize the CODE_CHAN_LIST as described in 6.6.8, shall set SERV_NEG_s to disabled, and shall enter the *Traffic Channel Initialization Substate* of the *Mobile Station Control on the Traffic Channel State*.
- If ASSIGN_MODE_r equals '001', the mobile station shall perform the following actions:
 - If the message requires an acknowledgment, the mobile station shall send an acknowledgment (see 6.6.3.1.2) using the access procedures specified in 6.6.3.1.1. Then, if a CDMA channel (CDMA_FREQ) is specified in the assignment, the mobile station shall set CDMACH_s = CDMA_FREQ_r, tune to the new frequency assignment, and measure the strength of each pilot listed in the assignment using the Neighbor Set search procedures specified in 6.6.6.2.1 and 6.6.6.2.2.
 - The mobile station shall set CONFIG_MSG_SEQ_s and ACC_MSG_SEQ_s to NULL (see 6.6.2.2) and shall set PILOT_PN_s to the pilot PN sequence offset of the strongest pilot in the list.
 - If the mobile station has not stored configuration parameters for the Primary Paging Channel of the new base station, or if the stored information is not current (see 6.6.2.2), the mobile station shall set SYS_PAR_MSG_SEQ_s, NGHBR_LST_MSG_SEQ_s, EXT_NGHBR_LST_MSG_SEQ_s, GEN_NGHBR_LST_MSG_SEQ_s, CHAN_LST_MSG_SEQ_s, EXT_SYS_PAR_MSG_SEQ_s, and GLOB_SERV_REDIR_MSG_SEQ_s to NULL.
 - The mobile station shall set PAGE_CHAN_s to '1' and PAGECH_s to the Primary Paging Channel. The mobile station shall then begin monitoring the Primary Paging Channel of the selected base station.
 - If RESPOND_r is equal to '1', the mobile station shall enter the *Update Overhead Information Substate* with an origination indication.

- 1 • If ASSIGN_MODE_r equals '010', the mobile station shall perform the following
2 actions:
 - 3 - If the mobile station does not support analog operation in the requested
4 band class, the mobile station shall send a *Mobile Station Reject Order* with
5 the ORDQ field set to '00000110' (capability not supported by the mobile
6 station) and the mobile station shall remain in the *Mobile Station Origination*
7 *Attempt Substate*.
 - 8 - If the mobile station supports analog operation in the requested band class
9 and RESPOND_r equals '1', the mobile station shall perform the following
10 actions:
 - 11 + If USE_ANALOG_SYS_r equals '0', the mobile station shall perform the
12 following actions:
 - 13 o If PACA_s is equal to enabled, the mobile station shall set PACA_s to
14 disabled and PACA_CANCEL to '0', shall disable the PACA state
15 timer, and should indicate to the user that the PACA call has been
16 canceled.
 - 17 o The mobile station shall enter the analog Initialization Task with an
18 origination indication (see 2.6.1).
 - 19 + If USE_ANALOG_SYS_r equals '1' the mobile station shall perform the
20 following actions:
 - 21 o The mobile station shall set SERVSYS_s to SYS_A if ANALOG_SYS_r is
22 equal to '0', or shall set SERVSYS_s to SYS_B if ANALOG_SYS_r is
23 equal to '1'.
 - 24 o If PACA_s is equal to enabled, the mobile station shall set PACA_s to
25 disabled and PACA_CANCEL to '0', shall disable the PACA state
26 timer, and should indicate to the user that the PACA call has been
27 canceled.
 - 28 o The mobile station shall then enter the analog Initialization Task with
29 an origination indication (see 2.6.1).
 - 30 • If ASSIGN_MODE_r equals '011', the mobile station shall perform the following
31 actions:
 - 32 - If the mobile station does not support analog operation in the requested
33 band class, the mobile station shall send a *Mobile Station Reject Order* with
34 the ORDQ field set to '00000110' (capability not supported by the mobile
35 station) and the mobile station shall remain in the *Mobile Station Origination*
36 *Attempt Substate*.
 - 37 - If the mobile station supports analog operation in the requested band class:
 - 38 + If the analog channel type is '00', the mobile station shall perform the
39 following actions:

- o The mobile station shall store the system identification ($SID_S = SID_r$), the voice mobile station attenuation code ($VMAC_S = VMAC_r$), the voice channel number ($ANALOG_CHAN_S = ANALOG_CHAN_r$), the SAT color code ($SCC_S = SCC_r$), and the message encryption mode indicator ($MEM_S = MEM_r$).
- o The mobile station shall set DTX_S to '00'.
- o If $PACA_S$ is equal to enabled, the mobile station shall set $PACA_S$ to disabled and $PACA_CANCEL$ to '0', shall disable the PACA state timer, and should indicate to the user that the PACA call is proceeding.
- o The mobile station shall enter the Confirm Initial Voice Channel Task (see 2.6.4.2) with an origination indication.
- + If the analog channel type is not '00', the mobile station shall perform the following actions:
 - o If the mobile supports narrow analog mode, the mobile station shall perform the following actions:
 - ◇ The mobile station shall store the system identification ($SID_S = SID_r$), the voice mobile station attenuation code ($VMAC_S = VMAC_r$), the voice channel number ($ANALOG_CHAN_S = ANALOG_CHAN_r$), the message encryption mode indicator ($MEM_S = MEM_r$), the analog channel type ($AN_CHAN_TYPE_S = AN_CHAN_TYPE_r$) and the digital SAT code ($DSCC_S = DSCC_MSB_r \times 4 + SCC_r$).
 - ◇ The mobile station shall set DTX_S to '00'.
 - ◇ If $PACA_S$ is equal to enabled, the mobile station shall set $PACA_S$ to disabled, shall disable the PACA state timer, and should indicate to the user that the PACA call is proceeding.
 - ◇ The mobile station shall enter the Confirm Initial Narrow Analog Voice Channel Task (see 2.6.5.2A of TIA/EIA/IS-91-A) with an origination indication.
 - o If the mobile station does not support narrow analog mode, the mobile station shall send a *Mobile Station Reject Order* with the ORDQ field set to '00000110' (capability not supported by the mobile station) and the mobile station shall remain in the *Mobile Station Origination Attempt Substate* of the *System Access State*.
- If $ASSIGN_MODE_r$ equals '100', the mobile station shall perform the following actions:

- 1 - If GRANTED_MODE_r equals '00', and the multiplex option or rate set
2 specified in the DEFAULT_CONFIG field is not supported by the mobile
3 station, the mobile station shall send a *Mobile Station Reject Order* with
4 ORDQ field set to '00000110' (capability not supported by the mobile station)
5 and remain in *Mobile Station Origination Attempt Substate*.
- 6 - If FREQ_INCL_r equals '0', the mobile station shall perform the following
7 actions:
 - 8 + The mobile station shall store the frame offset (FRAME_OFFSET_s =
9 FRAME_OFFSET_r), the message encryption mode indicator
10 (ENCRYPT_MODE_s = ENCRYPT_MODE_r), the granted mode
11 (GRANTED_MODE_s = GRANTED_MODE_r), and the default configuration
12 (DEFAULT_CONFIG_s = DEFAULT_CONFIG_r).
 - 13 + The mobile station shall set SERV_NEG_s to enabled.
 - 14 + If PACA_s is equal to enabled, the mobile station shall set PACA_s equal to
15 disabled and PACA_CANCEL to '0', shall disable the PACA state timer,
16 and should indicate to the user that the PACA call is proceeding.
 - 17 + The mobile station shall initialize CODE_CHAN_LIST as described in
18 6.6.8.
 - 19 + The mobile station shall then enter the *Traffic Channel Initialization*
20 *Substate* of the *Mobile Station Control on the Traffic Channel State*.
- 21 - If FREQ_INCL_r equals '1', the mobile station shall perform the following
22 actions:
 - 23 + If the band class is not supported by the mobile station, the mobile
24 station shall send a *Mobile Station Reject Order* with ORDQ field set to
25 '00000110' (capability not supported by the mobile station) and remain
26 in the *Mobile Station Origination Attempt Substate*.
 - 27 + If the band class is supported by the mobile station, the mobile station
28 shall perform the following actions:
 - 29 o The mobile station shall store the frame offset (FRAME_OFFSET_s =
30 FRAME_OFFSET_r), the message encryption mode indicator
31 (ENCRYPT_MODE_s = ENCRYPT_MODE_r), the granted mode
32 (GRANTED_MODE_s = GRANTED_MODE_r), the default configuration
33 (DEFAULT_CONFIG_s = DEFAULT_CONFIG_r), the band class
34 (CDMABAND_s = BAND_CLASS_r), and the frequency assignment
35 (CDMACH_s = CDMA_FREQ_r).
 - 36 o The mobile station shall set SERV_NEG_s to enabled.
 - 37 o If PACA_s is equal to enabled, the mobile station shall set PACA_s to
38 disabled and PACA_CANCEL to '0', shall disable the PACA state
39 timer, and should indicate to the user that the PACA call is
40 proceeding.

- 1 o The mobile station shall initialize the CODE_CHAN_LIST as described
2 in 6.6.8.
- 3 o The mobile station shall then tune to the new frequency assignment
4 and enter the *Traffic Channel Initialization Substate* of the *Mobile*
5 *Station Control on the Traffic Channel State*.
- 6 • If ASSIGN_MODE_r equals '101', the mobile station shall perform the following
7 actions:
 - 8 - If FREQ_INCL_r equals '0', the mobile station shall perform the following
9 actions:
 - 10 + If the message requires an acknowledgment, the mobile station shall
11 send an acknowledgment (see 6.6.3.1.2) using the access procedures
12 specified in 6.6.3.1.1. The mobile station shall set CONFIG_MSG_SEQ_s
13 and ACC_MSG_SEQ_s to NULL (see 6.6.2.2) and shall set PILOT_PN_s to
14 the pilot PN sequence offset of the strongest pilot in the list (PILOT_PN_r).
 - 15 + If the mobile station has not stored configuration parameters for the
16 Primary Paging Channel of the new base station, or if the stored
17 information is not current (see 6.6.2.2), the mobile station shall set
18 SYS_PAR_MSG_SEQ_s, NGHBR_LST_MSG_SEQ_s,
19 EXT_NGHBR_LST_MSG_SEQ_s, GEN_NGHBR_LST_MSG_SEQ_s,
20 CHAN_LST_MSG_SEQ_s, EXT_SYS_PAR_MSG_SEQ_s, and
21 GLOB_SERV_REDIR_MSG_SEQ_s to NULL.
 - 22 + The mobile station shall set PAGE_CHAN_s to '1' and PAGECH_s to the
23 Primary Paging Channel. The mobile station shall then begin monitoring
24 the Primary Paging Channel of the selected base station.
 - 25 + If RESPOND_r is equal to '1', the mobile station shall enter the *Update*
26 *Overhead Information Substate* with an origination indication within
27 T_{34m} seconds after:
 - 28 o receiving the *Channel Assignment Message*, if ACK_REQ is equal to
29 '0', or
 - 30 o sending the acknowledgment to the *Channel Assignment Message*, if
31 ACK_REQ is equal to '1'.
 - 32 + If RESPOND_r is equal to '0', the mobile station shall enter the *Mobile*
33 *Station Idle State* within T_{34m} seconds after:
 - 34 o receiving the *Channel Assignment Message*, if ACK_REQ is equal to
35 '0', or
 - 36 o sending the acknowledgment to the *Channel Assignment Message*, if
37 ACK_REQ is equal to '1'.
 - 38 - If FREQ_INCL_r equals '1', the mobile station shall perform the following
39 actions:

- 1 + If the band class is not supported by the mobile station, the mobile
2 station shall send a *Mobile Station Reject Order* with ORDQ field set to
3 '00000110' (capability not supported by the mobile station) and remain
4 in the *Mobile Station Origination Attempt Substate*.
- 5 + If the band class is supported by the mobile station, the mobile station
6 shall perform the following actions:
 - 7 o If the message requires an acknowledgment, the mobile station shall
8 send an acknowledgment (see 6.6.3.1.2) using the access procedures
9 specified in 6.6.3.1.1. The mobile station shall set
10 CONFIG_MSG_SEQ_s and ACC_MSG_SEQ_s to NULL (see 6.6.2.2) and
11 shall set PILOT_PN_s to the pilot PN sequence offset of the strongest
12 pilot in the list (PILOT_PN_r).
 - 13 o If the mobile station has not stored configuration parameters for the
14 Primary Paging Channel of the new base station, or if the stored
15 information is not current (see 6.6.2.2), the mobile station shall set
16 SYS_PAR_MSG_SEQ_s, NGHBR_LST_MSG_SEQ_s,
17 EXT_NGHBR_LST_MSG_SEQ_s, GEN_NGHBR_LST_MSG_SEQ_s,
18 CHAN_LST_MSG_SEQ_s, EXT_SYS_PAR_MSG_SEQ_s, and
19 GLOB_SERV_REDIR_MSG_SEQ_s to NULL.
 - 20 o The mobile station shall store the band class (CDMABAND_s =
21 BAND_CLASS_r) and the frequency assignment
22 (CDMACH_s = CDMA_FREQ_r).
 - 23 o The mobile station shall set PAGE_CHAN_s to '1' and PAGECH_s to the
24 Primary Paging Channel. The mobile station shall then begin
25 monitoring the Primary Paging Channel of the selected base station.
 - 26 o If RESPOND_r is equal to '1', the mobile station shall enter the *Update*
27 *Overhead Information Substate* with an origination indication within
28 T_{34m} seconds after:
 - 29 ◇ receiving the *Channel Assignment Message*, if ACK_REQ is equal
30 to '0', or
 - 31 ◇ sending the acknowledgment to the *Channel Assignment Message*
32 if ACK_REQ is equal to '1'.
 - 33 o If RESPOND_r is equal to '0', the mobile station shall enter the *Mobile*
34 *Station Idle State* within T_{34m} seconds after:
 - 35 ◇ receiving the *Channel Assignment Message*, if ACK_REQ is equal
36 to '0', or
 - 37 ◇ sending the acknowledgment to the *Channel Assignment*
38 *Message*, if ACK_REQ is equal to '1'.

39 4. Data Burst Message

1 5. *Extended Channel Assignment Message*: The mobile station shall process the
2 message as follows:

- 3 • If ASSIGN_MODE_r equals '000', the mobile station shall perform the following
4 actions:
 - 5 – If FREQ_INCL_r equals '0', the mobile station shall perform the following
6 actions:
 - 7 + The mobile station shall store the frame offset (FRAME_OFFSET_s =
8 FRAME_OFFSET_r), the message encryption mode indicator
9 (ENCRYPT_MODE_s = ENCRYPT_MODE_r), the granted mode
10 (GRANTED_MODE_s = GRANTED_MODE_r), the default configuration
11 (DEFAULT_CONFIG_s = DEFAULT_CONFIG_r), and the occurrences of
12 PILOT_PN and PWR_COMB for each included member of the Active Set.
 - 13 + The mobile station shall set SERV_NEG_s to enabled.
 - 14 + If PACA_s is equal to enabled, the mobile station shall set PACA_s equal to
15 disabled and PACA_CANCEL to '0', shall disable the PACA state timer,
16 and should indicate to the user that the PACA call is proceeding.
 - 17 + The mobile station shall initialize CODE_CHAN_LIST as described in
18 6.6.8.
 - 19 + The mobile station shall then enter the *Traffic Channel Initialization*
20 *Substate* of the *Mobile Station Control on the Traffic Channel State*.
 - 21 – If FREQ_INCL_r equals '1', the mobile station shall perform the following
22 actions:
 - 23 + If the band class is not supported by the mobile station, the mobile
24 station shall send a *Mobile Station Reject Order* with ORDQ field set to
25 '00000110' (capability not supported by the mobile station) and remain
26 in the *Mobile Station Origination Attempt Substate*.
 - 27 + If the band class is supported by the mobile station, the mobile station
28 shall perform the following actions:
 - 29 o The mobile station shall store the frame offset (FRAME_OFFSET_s =
30 FRAME_OFFSET_r); the message encryption mode indicator
31 (ENCRYPT_MODE_s = ENCRYPT_MODE_r); the granted mode
32 (GRANTED_MODE_s = GRANTED_MODE_r); the default configuration
33 (DEFAULT_CONFIG_s = DEFAULT_CONFIG_r); the band class
34 (CDMABAND_s = BAND_CLASS_r); the frequency assignment
35 (CDMACH_s = CDMA_FREQ_r); and the occurrences of PILOT_PN and
36 PWR_COMB_IND for each included member of the Active Set.
 - 37 o The mobile station shall set SERV_NEG_s to enabled.
 - 38 o The mobile station shall initialize CODE_CHAN_LIST as described in
39 6.6.8.

- o The mobile station shall then tune to the new frequency assignment and enter the *Traffic Channel Initialization Substate* of the *Mobile Station Control on the Traffic Channel State*.
- If GRANTED_MODE_r equals '00', and the multiplex option and rate set specified in the DEFAULT_CONFIG field is not supported by the mobile station, the mobile station shall send a *Mobile Station Reject Order* with ORDQ field set to '00000110' (capability not supported by the mobile station) and remain in the *Mobile Station Origination Attempt Substate*.
- If ASSIGN_MODE_r equals '001', the mobile station shall perform the following actions:
 - If FREQ_INCL_r equals '0', the mobile station shall perform the following actions:
 - + If the message requires an acknowledgment, the mobile station shall send an acknowledgment (see 6.6.3.1.2) using the access procedures specified in 6.6.3.1.1. Then, the mobile station shall set CONFIG_MSG_SEQ_s and ACC_MSG_SEQ_s to NULL (see 6.6.2.2) and shall set PILOT_PN_s to the pilot PN sequence offset of the strongest pilot in the list (PILOT_PN_r).
 - + If the mobile station has not stored configuration parameters for the Primary Paging Channel of the new base station, or if the stored information is not current (see 6.6.2.2), the mobile station shall set SYS_PAR_MSG_SEQ_s, NGHBR_LST_MSG_SEQ_s, EXT_NGHBR_LST_MSG_SEQ_s, GEN_NGHBR_LST_MSG_SEQ_s, CHAN_LST_MSG_SEQ_s, EXT_SYS_PAR_MSG_SEQ_s, and GLOB_SERV_REDIR_MSG_SEQ_s to NULL.
 - + The mobile station shall set PAGE_CHAN_s to '1' and PAGECH_s to the Primary Paging Channel. The mobile station shall then begin monitoring the Primary Paging Channel of the selected base station.
 - + If RESPOND_r is equal to '1', the mobile station shall enter the *Update Overhead Information Substate* with an origination indication within T_{34m} seconds after:
 - o receiving the *Extended Channel Assignment Message*, if ACK_REQ is equal to '0', or
 - o sending the acknowledgment to the *Extended Channel Assignment Message* if ACK_REQ is equal to '1'.
 - + If RESPOND_r is equal to '0', the mobile station shall enter the *Mobile Station Idle State* within T_{34m} seconds after:
 - o receiving the *Extended Channel Assignment Message*, if ACK_REQ is equal to '0', or
 - o sending the acknowledgment to the *Extended Channel Assignment Message*, if ACK_REQ is equal to '1'.

- 1 - If $FREQ_INCL_r$ equals '1', the mobile station shall perform the following
2 actions:
 - 3 + If the band class is not supported by the mobile station, the mobile
4 station shall send a *Mobile Station Reject Order* with ORDQ field set to
5 '00000110' (capability not supported by the mobile station) and remain
6 in the *Mobile Station Origination Attempt Substate*.
 - 7 - If the band class is supported by the mobile station, the mobile station shall
8 perform the following actions:
 - 9 + If the message requires an acknowledgment, the mobile station shall
10 send an acknowledgment (see 6.6.3.1.2) using the access procedures
11 specified in 6.6.3.1.1. Then, the mobile station shall set CONFIG-
12 MSG_SEQ_s and ACC_MSG_SEQ_s to NULL (see 6.6.2.2) and shall set
13 PILOT_PN_s to the pilot PN sequence offset of the strongest pilot in the list
14 (PILOT_PN_r).
 - 15 + If the mobile station has not stored configuration parameters for the
16 Primary Paging Channel of the new base station, or if the stored
17 information is not current (see 6.6.2.2), the mobile station shall set
18 SYS_PAR_MSG_SEQ_s, NGHBR_LST_MSG_SEQ_s,
19 EXT_NGHBR_LST_MSG_SEQ_s, GEN_NGHBR_LST_MSG_SEQ_s,
20 CHAN_LST_MSG_SEQ_s, EXT_SYS_PAR_MSG_SEQ_s, and
21 GLOB_SERV_REDIR_MSG_SEQ_s to NULL. The mobile station shall store
22 the band class ($CDMABAND_s = BAND_CLASS_r$) and the frequency
23 assignment ($CDMACH_s = CDMA_FREQ_r$).
 - 24 + The mobile station shall set PAGE_CHAN_s to '1' and PAGECH_s to the
25 Primary Paging Channel. The mobile station shall then begin monitoring
26 the Primary Paging Channel of the selected base station.
 - 27 + If RESPOND_r is equal to '1', the mobile station shall enter the *Update*
28 *Overhead Information Substate* with an origination indication within
29 T_{34m} seconds after receiving the *Extended Channel Assignment Message*
30 or, if ACK_REQ_n is equal to '1', after sending the acknowledgment to the
31 *Extended Channel Assignment Message*.
- 32 • If $ASSIGN_MODE_r$ equals '010', the mobile station shall perform the following
33 actions:
 - 34 - If the mobile station does not support analog operation in the requested
35 band class, the mobile station shall send a *Mobile Station Reject Order* with
36 ORDQ field set to '00000110' (capability not supported by the mobile station)
37 and remain in the *Mobile Station Origination Attempt Substate*.
 - 38 - If the mobile station supports analog operation in the requested band class,
39 the mobile station shall perform the following actions:
 - 40 + If RESPOND_r equals '1' and USE_ANALOG_SYS_r equals '0', the mobile
41 station shall enter the analog Initialization Task with an origination
42 indication (see 2.6.1).

- 1 + If RESPOND_r equals '1' and USE_ANALOG_SYS_r equals '1', the mobile
2 station shall perform the following actions:
 - 3 o The mobile station shall set SERVSYS_s to SYS_A if ANALOG_SYS_r is
4 equal to '0', or set SERVSYS_s to SYS_B if ANALOG_SYS_r is equal to
5 '1'.
 - 6 o The mobile station shall then enter the analog Initialization Task with
7 an origination indication (see 2.6.1).
- 8 • If ASSIGN_MODE_r equals '011', the mobile station shall perform the following
9 actions:
 - 10 - If the mobile station does not support analog operation in the requested
11 band class, the mobile station shall send a *Mobile Station Reject Order* with
12 the ORDQ field set to '00000110' (capability not supported by the mobile
13 station) and the mobile station shall remain in the *Mobile Station Origination*
14 *Attempt Substate*.
 - 15 - If the mobile station supports analog operation in the requested band class,
16 the mobile station shall perform the following actions:
 - 17 + If the analog channel type is '00', the mobile station shall perform the
18 following actions:
 - 19 o The mobile station shall store the system identification ($\text{SID}_s = \text{SID}_r$),
20 voice mobile station attenuation code ($\text{VMAC}_s = \text{VMAC}_r$), voice
21 channel number ($\text{ANALOG_CHAN}_s = \text{ANALOG_CHAN}_r$), SAT color
22 code ($\text{SCC}_s = \text{SCC}_r$), and message encryption mode indicator (MEM_s
23 = MEM_r).
 - 24 o The mobile station shall set DTX_s to '00'.
 - 25 o If PACA_s is equal to enabled, the mobile station shall set PACA_s to
26 disabled and PACA_CANCEL to '0', shall disable the PACA state
27 timer, and should indicate to the user that the PACA call is
28 proceeding.
 - 29 o The mobile station shall enter the Confirm Initial Voice Channel Task
30 (see 2.6.4.2) with an origination indication.
 - 31 + If the analog channel type is not '00', the mobile station shall perform the
32 following actions:
 - 33 o If the mobile supports narrow analog mode, the mobile station shall
34 perform the following actions:
 - 35 ◇ The mobile station shall store the system identification ($\text{SID}_s =$
36 SID_r), voice mobile station attenuation code ($\text{VMAC}_s = \text{VMAC}_r$),
37 voice channel number ($\text{ANALOG_CHAN}_s = \text{ANALOG_CHAN}_r$),
38 message encryption mode indicator ($\text{MEM}_s = \text{MEM}_r$), analog
39 channel type ($\text{AN_CHAN_TYPE}_s = \text{AN_CHAN_TYPE}_r$) and the
40 digital SAT code ($\text{DSCC}_s = \text{DSCC_MSB}_r \times 4 + \text{SCC}_r$).

- 1 ◇ The mobile station shall set DTX_S to '00'.
- 2 ◇ If PACA_S is equal to enabled, the mobile station shall set PACA_S to
- 3 disabled and PACA_CANCEL to '0', shall disable the PACA state
- 4 timer, and should indicate to the user that the PACA call is
- 5 proceeding.
- 6 ◇ The mobile station shall enter the Confirm Initial Narrow Analog
- 7 Voice Channel Task (see 2.6.5.2A of IS-91) with an origination
- 8 indication.
- 9 o If the mobile station does not support narrow analog mode, the
- 10 mobile station shall send a *Mobile Station Reject Order* with the
- 11 ORDQ field set to '00000110' (capability not supported by the mobile
- 12 station) and the mobile station shall remain in the *Mobile Station*
- 13 *Origination Attempt Substate* of the *System Access State*.
- 14 6. *Feature Notification Message*: If RELEASE_r is equal to '1', the mobile station shall
- 15 enter the *Mobile Station Idle State* or the *System Determination Substate* of the
- 16 *Mobile Station Initialization State* with a release indication (see 6.6.1.1).
- 17 7. *Intercept Order*: The mobile station shall enter the *Mobile Station Idle State*.
- 18 8. *Local Control Order*
- 19 9. *Lock Until Power-Cycled Order*: The mobile station shall disable its transmitter and
- 20 record the reason for the *Lock Until Power-Cycled Order* in the mobile station's semi-
- 21 permanent memory (LCKRSN_{P-S-P} equals the least significant four bits of ORDQ_r).
- 22 The mobile station should notify the user of the locked condition. The mobile
- 23 station shall enter the *System Determination Substate* of the *Mobile Station*
- 24 *Initialization State* with a lock indication (see 6.6.1.1), and shall not enter the
- 25 *System Access State* again until after the next mobile station power-up or until it
- 26 has received an *Unlock Order*. This requirement shall take precedence over any
- 27 other mobile station requirement specifying entry to the *System Access State*.
- 28 10. *Maintenance Required Order*: The mobile station shall record the reason for the
- 29 *Maintenance Required Order* in the mobile station's semi-permanent memory
- 30 (MAINTRSN_{S-P} equals the least significant four bits of ORDQ_r). The mobile station
- 31 shall remain in the unlocked condition. The mobile station should notify the user of
- 32 the maintenance required condition.
- 33 11. *PACA Message*: If P_REV_IN_USE_S is less than or equal to four and the mobile
- 34 station does not support PACA capability, the mobile station shall send a *Mobile*
- 35 *Station Reject Order* with the ORDQ field set to '00000110' (message requires a
- 36 capability that is not supported by the mobile station); otherwise, the mobile station
- 37 shall process the message as follows:
- 38 • If PACA_S is equal to disabled, the mobile station shall perform the following
- 39 actions:

- 1 - If the purpose of the message is to respond to an *Origination Message*
2 (PURPOSE_r is equal to '0000'), the mobile station shall perform the following
3 actions:
 - 4 + The mobile station shall set PACA_s to enabled and shall set PACA_SID_s
5 to SID_s.
 - 6 + The mobile station shall set the PACA state timer to the duration shown
7 in Table 7.7.2.3.2.20-2 corresponding to the value of PACA_TIMEOUT_s.
 - 8 + The mobile station should indicate to the user that the call has been
9 queued as a PACA call, and should indicate the current queue position
10 (Q_POS_r) of the call.
 - 11 + The mobile station shall enter the *Mobile Station Idle State*.
- 12 - If the purpose of the message is to cancel the PACA call (PURPOSE_r is equal
13 to '0011'), the mobile station shall perform the following actions:
 - 14 + The mobile station shall set PACA_s to disabled and PACA_CANCEL to '0',
15 shall disable the PACA state timer, and should indicate to the user that
16 the PACA call has been canceled.
 - 17 + The mobile station shall enter the *Mobile Station Idle State*.
- 18 - If the purpose of the message is anything else (PURPOSE_r is not equal to
19 '0000'), the mobile station shall ignore the message. The mobile station shall
20 remain in the *Mobile Station Origination Attempt Substate*.
- 21 • If PACA_s is equal to enabled, the mobile station shall perform the following
22 actions:
 - 23 - If the purpose of the message is to respond to an *Origination Message*
24 (PURPOSE_r is equal to '0000'), the mobile station shall perform the following
25 actions:
 - 26 + The mobile station should indicate to the user that the PACA call is still
27 queued, and should indicate to the user the current queue position
28 (Q_POS_r) of the call.
 - 29 + The mobile station shall set the PACA state timer to the duration shown
30 in Table 7.7.2.3.2.20-2 corresponding to the value of PACA_TIMEOUT_s.
 - 31 + The mobile station shall enter the *Mobile Station Idle State*.
 - 32 - If the purpose of the message is to provide the queue position of the PACA
33 call (PURPOSE_r is equal to '0001'), the mobile station shall perform the
34 following actions:
 - 35 + The mobile station should indicate to the user that the PACA call is still
36 queued, and should indicate the current queue position (Q_POS_r) of the
37 call.
 - 38 + The mobile station shall set the PACA state timer to the duration shown
39 in Table 7.7.2.3.2.20-2 corresponding to the value of PACA_TIMEOUT_s.

- 1 + The mobile station shall enter the *Mobile Station Idle State*.
- 2 - If the purpose of the message is to instruct the mobile station to re-originate
- 3 the PACA call ($PURPOSE_r$ is equal to '0010'), the mobile station shall remain
- 4 in the *Mobile Station Origination Attempt Substate*.
- 5 - If the purpose of the message is to cancel the PACA call ($PURPOSE_r$ is equal
- 6 to '0011'), the mobile station shall perform the following actions:
- 7 + The mobile station shall set $PACA_s$ to disabled, shall disable the PACA
- 8 state timer, and should indicate to the user that the PACA call has been
- 9 canceled.
- 10 + The mobile station shall enter the *Mobile Station Idle State*.
- 11 12. *Registration Accepted Order*: If $ORDQ_r$ is equal to '00000101', the mobile station
- 12 shall set $ROAM_INDI_s$ to $ROAM_INDI_r$ and should display the roaming condition.
- 13 13. *Registration Rejected Order*: This order indicates that normal service is not available
- 14 on this system. The mobile station shall disable the full-TMSI timer. If the received
- 15 order specifies to delete the TMSI ($ORDQ = '00000100'$), the mobile station shall set
- 16 all the bits of the $TMSI_CODE_{s-p}$ to '1'. The mobile station shall enter the *System*
- 17 *Determination Substate* of the *Mobile Station Initialization State* with a registration
- 18 rejected indication (see 6.6.1.1).
- 19 14. *Release Order*: If $NDSS_ORIG_s$ is equal to enabled, the mobile station shall set
- 20 $NDSS_ORIG_s$ to disabled, and should indicate to the user that the call origination
- 21 has been canceled. The mobile station shall enter the *Mobile Station Idle State* or
- 22 the *System Determination Substate* of the *Mobile Station Initialization State* with a
- 23 release indication (see 6.6.1.1). If the mobile station enters the *Mobile Station Idle*
- 24 *State*, and if $PACA_s$ is equal to enabled, the mobile station shall set $PACA_s$ to
- 25 disabled and $PACA_CANCEL$ to '0', shall disable the PACA state timer, and should
- 26 indicate to the user that the PACA call has been canceled.
- 27 15. *Reorder Order*: If $NDSS_ORIG_s$ is equal to enabled, the mobile station shall set
- 28 $NDSS_ORIG_s$ to disabled, and should indicate to the user that the call origination
- 29 has been canceled. If $PACA_s$ is equal to enabled, the mobile station shall set $PACA_s$
- 30 to disabled and $PACA_CANCEL$ to '0', shall disable the PACA state timer, and
- 31 should indicate to the user that the PACA call has been canceled. The mobile
- 32 station shall enter the *Mobile Station Idle State*.
- 33 16. *Service Redirection Message*: The mobile station shall process the message as
- 34 follows:
- 35 • If the mobile station is directed to an unsupported operation mode or band
- 36 class, the mobile station shall respond with a *Mobile Station Reject Order* with
- 37 $ORDQ$ equal to '00000110' (message requires a capability that is not supported
- 38 by the mobile station).
- 39 • If $DELETE\ TMSI_r$ is equal to '1', the mobile station shall set all the bits of
- 40 $TMSI_CODE_{s-p}$ to '1'.
- 41 • The mobile station shall disable the full-TMSI timer.

- 1 • The mobile station shall set $RETURN_IF_FAIL_S = RETURN_IF_FAIL_r$.
- 2 • If $RECORD_TYPE_r$ is '00000000', the mobile station shall set $RETURN_IF_FAIL_S$
- 3 = $RETURN_IF_FAIL_r$, and enter the *System Determination Substate* of the *Mobile*
- 4 *Station Initialization State* with an NDSS off indication (see 6.6.1.1); otherwise:
 - 5 – if $REDIRECT_TYPE_r$ is '0', the mobile station shall store the redirection
 - 6 record received in the message as $REDIRECT_REC_S$ and shall enter the
 - 7 *System Determination Substate* of the *Mobile Station Initialization State* with
 - 8 a redirection indication (see 6.6.1.1).
 - 9 – if $REDIRECT_TYPE_r$ is '1', the mobile station shall store the redirection
 - 10 record received in the message as $REDIRECT_REC_S$ and shall enable
 - 11 $NDSS_ORIG_S$, and shall record the dialed digits. The mobile station shall
 - 12 enter the *System Determination Substate* of the *Mobile Station Initialization*
 - 13 *State* with a redirection indication (see 6.6.1.1).
- 14 17. *SSD Update Message*: The mobile station shall respond to the message as specified
- 15 in 6.3.12.1.9, using the access procedures specified in 6.6.3.1.1.2.
- 16 18. *Status Request Message*: The mobile station shall disable the *System Access State*
- 17 timer and respond to the message using the access procedures specified in
- 18 6.6.3.1.1.2. If $P_REV_IN_USE_S$ is less than or equal to three, the mobile station
- 19 shall respond with a *Status Response Message*. If $P_REV_IN_USE_S$ is greater than
- 20 three, the mobile station shall respond with an *Extended Status Response Message*.
- 21 If the message does not specify any qualification information ($QUAL_INFO_TYPE_r$ is
- 22 equal to '00000000'), the mobile station shall include the requested information
- 23 records in the response. If the message specifies a band class ($QUAL_INFO_TYPE_r$
- 24 is equal to '00000001'), the mobile station shall only include the requested
- 25 information records for the specified band class ($BAND_CLASS_r$) in the response. If
- 26 the message specifies a band class and an operating mode ($QUAL_INFO_TYPE_r$ is
- 27 equal to '00000010'), the mobile station shall only include the requested information
- 28 records for the specified band class ($BAND_CLASS_r$) and operating mode
- 29 (OP_MODE_r) in the response. If the message specifies a band class or a band class
- 30 and an operating mode which are not supported by the mobile station, the mobile
- 31 station shall send a *Mobile Station Reject Order* with $ORDQ$ set to '00000110'
- 32 (message requires a capability that is not supported by the mobile station). If the
- 33 response to this message exceeds the allowable length, the mobile station shall send
- 34 a *Mobile Station Reject Order* with $ORDQ$ set to '00001000' (response message would
- 35 exceed the allowable length). If the message specifies an information record which
- 36 is not supported by the mobile station for the specified band class and operating
- 37 mode, the mobile station shall send a *Mobile Station Reject Order* with $ORDQ$ set to
- 38 '00001001' (information record is not supported for the specified band class and
- 39 operating mode).
- 40 19. *TMSI Assignment Message*: The mobile station shall store the TMSI zone and code
- 41 as follows:
 - 42 • The mobile station shall store the length of the TMSI zone field by setting
 - 43 $ASSIGNING_TMSI_ZONE_LEN_{S-p}$ to $TMSI_ZONE_LEN_r$.

- The mobile station shall store the assigning TMSI zone number by setting the ASSIGNING_TMSI_ZONE_LEN_{s-p} least significant octets of ASSIGNING_TMSI_ZONE_{s-p} to TMSI_ZONE_r, and
- The mobile station shall store the TMSI code by setting TMSI_CODE_{s-p} to TMSI_CODE_r.

The mobile station shall set the TMSI expiration time by setting TMSI_EXP_TIME_{s-p} to TMSI_EXP_TIME_r. The mobile station shall disable the full-TMSI timer. The mobile station shall then respond with a *TMSI Assignment Completion Message* within T_{56m} seconds.

20. *Any other message:* If the mobile station receives any other message with a MSG_TYPE specified in Table 7.7.2.3-1, it shall process all layer 2 fields of the message and shall ignore all other fields. The mobile station shall ignore all other messages.

If the mobile station performs an access probe handoff or access handoff and receives any of the following messages, it shall process the message as specified in 6.6.3.1.3.2 and 6.6.3.1.3.3:

1. *System Parameters Message*
2. *Access Parameters Message*
3. *Neighbor List Message*
4. *Extended System Parameters Message*
5. *Extended Neighbor List Message*
6. *General Neighbor List Message*

6.6.3.6 Registration Access Substate

In this substate, the mobile station sends a *Registration Message*. If the base station responds with an authentication request, the mobile station responds in this substate.

Upon entering the *Registration Access Substate*, the mobile station shall send the *Registration Message*, using the access procedures specified in 6.6.3.1.1.2. If message authentication is enabled (see 6.3.12.1), the mobile station shall calculate the values of the AUTHR and RANDC fields using the current value of RAND_s.

While in this substate, the mobile station shall monitor the Paging Channel. If the mobile station declares a loss of the Paging Channel (see 6.4.3), the mobile station shall perform the following:

- If PACA_s is equal to enabled, the mobile station shall set PACA_s to disabled and PACA_CANCEL to '0', shall disable the PACA state timer, and should indicate to the user that the PACA call has been canceled.
- The mobile station shall declare an access attempt failure and update its registration variables as specified in 6.6.5.5.3.2.

- The mobile station shall disable its transmitter and enter the *Mobile Station Idle State*.

If the mobile station receives an acknowledgment to any message sent by the mobile station in this substate, it shall end the access attempt, send an acknowledgment if required, and shall then enter the *Mobile Station Idle State* unless:

- If the registration access was initiated due to a user direction to power down, the mobile station shall update registration variables as specified in 6.6.5.5.3.3 and may power down. The power down may occur prior to the transmission of an acknowledgment that may have been required by the most recently received message.
- If the message requires a response, the mobile station shall send a response to the message in this substate.

If the access attempt for a *Registration Message* ends by the receipt of an acknowledgment from the base station, the mobile station shall update its registration variables as specified in 6.6.5.5.3.1.

If the mobile station is directed by the user to originate a call, the mobile station may process the origination request as follows:

- The mobile station shall abort any access attempt in progress.
- If PACA_S is equal to enabled, the mobile station shall set PACA_S to disabled and PACA_CANCEL to '0', shall disable the PACA state timer, and should indicate to the user that the PACA call has been canceled.
- The mobile station shall enter the *Mobile Station Origination Attempt Substate* with an origination indication.

If PACA_S is equal to enabled, the mobile station shall set PACA_CANCEL to '1' when the user directs the mobile station to cancel a PACA call.

If the mobile station receives a *General Page Message*, the mobile station may determine if there is a page match (see 6.6.2.3). If a match is declared, the mobile station shall perform the following:

- The mobile station shall abort any access attempt in progress.
- The mobile station shall enter the *Page Response Substate*.

If a mobile station receives any message with a MSG_TYPE specified in Table 7.7.2.3-1 addressed to the mobile station, it shall process the ACK_SEQ and VALID_ACK fields of layer 2 as specified in 6.6.3.1.2. If, after processing the ACK_SEQ and VALID_ACK fields, an access attempt is still in progress, the mobile station shall ignore the ACK_REQ field of layer 2 and the layer 3 fields of the message; otherwise, the mobile station shall process the ACK_REQ field as described in 6.6.3.1.2 and the layer 3 fields of the message as described below.

If the mobile station is to exit the *System Access State* as a result of processing the layer 3 fields of a message requiring an acknowledgment, the mobile station shall send an

acknowledgment (see 6.6.3.1.2) using the access procedures specified in 6.6.3.1.1 and then exit the *System Access State*.

The following directed messages and orders can be received. If any field value of the message or order is outside its permissible range, the mobile station may send a *Mobile Station Reject Order* with ORDQ equal to '00000100' (message field not in valid range).

1. *Authentication Challenge Message*: If the registration access was initiated due to a user direction to power down, the mobile station shall ignore the message; otherwise, the mobile station shall respond to the message as specified in 6.3.12.1.5, regardless of the value of AUTH_S, using the access procedures specified in 6.6.3.1.1.2.
2. *Base Station Challenge Confirmation Order*: If the registration access was initiated due to a user direction to power down, the mobile station shall ignore the message; otherwise, the mobile station shall respond to the message as specified in 6.3.12.1.9, using the access procedures specified in 6.6.3.1.1.2.
3. *Data Burst Message*
4. *Feature Notification Message*
5. *Local Control Order*
6. *Lock Until Power-Cycled Order*: The mobile station shall disable its transmitter and record the reason for the *Lock Until Power-Cycled Order* in the mobile station's semi-permanent memory (LCKRSN_{P-S-P} equals the least significant four bits of ORDQ_r). The mobile station should notify the user of the locked condition. The mobile station shall enter the *System Determination Substate* of the *Mobile Station Initialization State* with a lock indication (see 6.6.1.1), and shall not enter the *System Access State* again until after the next mobile station power-up or until it has received an *Unlock Order*. This requirement shall take precedence over any other mobile station requirement specifying entry to the *System Access State*.
7. *Maintenance Required Order*: The mobile station shall record the reason for the *Maintenance Required Order* in the mobile station's semi-permanent memory (MAINTRSN_{S-P} equals the least significant four bits of ORDQ_r). The mobile station shall remain in the unlocked condition. The mobile station should notify the user of the maintenance required condition.
8. *PACA Message*: If P_REV_IN_USE_S is less than or equal to four and the mobile station does not support PACA capability, the mobile station shall send a *Mobile Station Reject Order* with the ORDQ field set to '00000110' (message requires a capability that is not supported by the mobile station); otherwise, the mobile station shall process the message as follows:
 If PACA_S is equal to disabled, the mobile station shall send a *Mobile Station Reject Order* with the ORDQ field set to '00000010' (message not accepted in this state).
 If PACA_S is equal to enabled, the mobile station shall perform the following:

- 1 • If the purpose of the message is to respond to an *Origination Message*
2 (PURPOSE_r is equal to '0000'), the mobile station shall send a *Mobile Station*
3 *Reject Order* with the ORDQ field set to '00000010' (message not accepted in this
4 state).
- 5 • If the purpose of the message is to provide the queue position of the PACA call
6 (PURPOSE_r is equal to '0001'), the mobile station shall set the PACA state timer
7 to the duration shown in Table 7.7.2.3.2.20-2 corresponding to the value of
8 PACA_TIMEOUT_s, should indicate to the user that the PACA call is still queued,
9 and should indicate to the user the current queue position (Q_POS_r) of the call.
- 10 • If the purpose of the message is to instruct the mobile station to re-originate the
11 PACA call (PURPOSE_r is equal to '0010'), the mobile station shall abort any
12 access attempt in progress, shall set the PACA state timer to the duration shown
13 in Table 7.7.2.3.2.20-2 corresponding to the value of PACA_TIMEOUT_s, and
14 shall enter the *Mobile Station Origination Attempt Substate* with a PACA response
15 indication.
- 16 • If the purpose of the message is to cancel the PACA call (PURPOSE_r is equal to
17 '0011'), the mobile station shall set PACA_s to disabled and PACA_CANCEL to '0',
18 shall disable the PACA state timer, and should indicate to the user that the
19 PACA call has been canceled.
- 20 9. *Registration Accepted Order*: If ORDQ_r = '00000101', the mobile station shall set
21 ROAM_IND_s = ROAM_IND_r and should display the roaming condition.
- 22 10. *Registration Rejected Order*: This order indicates that normal service is not available
23 on this system. The mobile station shall disable the full-TMSI timer. If the received
24 order specifies to delete the TMSI (ORDQ = '00000100'), the mobile station shall set
25 all the bits of the TMSI_CODE_{s-p} to '1'. The mobile station shall enter the *System*
26 *Determination Substate* of the *Mobile Station Initialization State* with a registration
27 rejected indication (see 6.6.1.1).
- 28 11. *Release Order*: If NDSS_ORIG_s is equal to enabled, the mobile station shall set
29 NDSS_ORIG_s to disabled, and should indicate to the user that the call origination
30 has been canceled. The mobile station shall enter the *Mobile Station Idle State* or
31 the *System Determination Substate* of the *Mobile Station Initialization State* with a
32 release indication (see 6.6.1.1). If the mobile station enters the *Mobile Station Idle*
33 *State*, and if PACA_s is equal to enabled, the mobile station shall set PACA_s to
34 disabled and PACA_CANCEL to '0', shall disable the PACA state timer, and should
35 indicate to the user that the PACA call has been canceled.
- 36 12. *Service Redirection Message*: The mobile station shall process the message as
37 follows:
 - 38 • If the mobile station is directed to an unsupported operation mode or band
39 class, the mobile station shall respond with a *Mobile Station Reject Order* with
40 ORDQ equal to '00000110' (message requires a capability that is not supported
41 by the mobile station).

- 1 • If DELETE_TMSI_r is equal to '1', the mobile station shall set all the bits of
2 TMSI_CODE_{s-p} to '1'. The mobile station shall disable the full-TMSI timer.
- 3 • The mobile station shall set RETURN_IF_FAIL_s = RETURN_IF_FAIL_r.
- 4 • If RECORD_TYPE_r is equal to '00000000', the mobile station shall enter the
5 *System Determination Substate* of the *Mobile Station Initialization State* with an
6 NDSS off indication (see 6.6.1.1); otherwise, the mobile station shall store the
7 redirection record received in the message as REDIRECT_REC_s and shall enter
8 the *System Determination Substate* of the *Mobile Station Initialization State* with a
9 redirection indication (see 6.6.1.1).
- 10 13. *SSD Update Message*: If the registration access was initiated due to a user direction
11 to power down, the mobile station shall ignore the message. Otherwise, the mobile
12 station shall respond to the message as specified in 6.3.12.1.9, using the access
13 procedures specified in 6.6.3.1.1.2.
- 14 14. *Status Request Message*: The mobile station shall disable the *System Access State*
15 timer and respond to the message using the access procedures specified in
16 6.6.3.1.1.2. If P_REV_IN_USE_s is less than or equal to three, the mobile station
17 shall respond with a *Status Response Message*. If P_REV_IN_USE_s is greater than
18 three, the mobile station shall respond with an *Extended Status Response Message*.
19 If the message does not specify any qualification information (QUAL_INFO_TYPE_r is
20 equal to '00000000'), the mobile station shall include the requested information
21 records in the response. If the message specifies a band class (QUAL_INFO_TYPE_r
22 is equal to '00000001'), the mobile station shall only include the requested
23 information records for the specified band class (BAND_CLASS_r) in the response. If
24 the message specifies a band class and an operating mode (QUAL_INFO_TYPE_r is
25 equal to '00000010'), the mobile station shall only include the requested information
26 records for the specified band class (BAND_CLASS_r) and operating mode
27 (OP_MODE_r) in the response.
- 28 If the message specifies a band class or a band class and an operating mode which
29 are not supported by the mobile station, the mobile station shall send a *Mobile*
30 *Station Reject Order* with ORDQ set to '00000110' (message requires a capability
31 that is not supported by the mobile station). If the response to this message
32 exceeds the allowable length, the mobile station shall send a *Mobile Station Reject*
33 *Order* with ORDQ set to '00001000' (response message would exceed the allowable
34 length). If the message specifies an information record which is not supported by
35 the mobile station for the specified band class and operating mode, the mobile
36 station shall send a *Mobile Station Reject Order* with ORDQ set to '00001001'
37 (information record is not supported for the specified band class and operating
38 mode).
- 39 15. *TMSI Assignment Message*: The mobile station shall store the TMSI zone and code
40 as follows:
 - 41 • The mobile station shall store the length of the TMSI zone field by setting
42 ASSIGNING_TMSI_ZONE_LEN_{s-p} to TMSI_ZONE_LEN_r;

- The mobile station shall store the assigning TMSI zone number by setting the ASSIGNING_TMSI_ZONE_LEN_{s-p} least significant octets of ASSIGNING_TMSI_ZONE_{s-p} to TMSI_ZONE_r, and
- The mobile station shall store the TMSI code by setting TMSI_CODE_{s-p} to TMSI_CODE_r.

The mobile station shall set the TMSI expiration time by setting TMSI_EXP_TIME_{s-p} to TMSI_EXP_TIME_r. The mobile station shall disable the full-TMSI timer. The mobile station shall then respond with a *TMSI Assignment Completion Message* within T_{56m} seconds.

16. *Any other message*: If the mobile station receives any other message with a MSG_TYPE specified in Table 7.7.2.3-1, it shall process all layer 2 fields of the message and shall ignore all other fields. The mobile station shall ignore all other messages.

6.6.3.7 Mobile Station Message Transmission Substate

In this substate, the mobile station sends a *Data Burst Message*. If the base station responds with an authentication request, the mobile station responds in this substate.

Support of this substate is optional.

Upon entering the *Mobile Station Message Transmission Substate*, the mobile station shall transmit the *Data Burst Message* using the access procedures specified in 6.6.3.1.1.2. If message authentication is enabled (see 6.3.12.1), the mobile station shall calculate the values of the AUTHR and RANDC fields using the current value of RAND_s.

While in this substate, the mobile station shall monitor the Paging Channel. If the mobile station declares a loss of the Paging Channel (see 6.4.3), the mobile station shall perform the following:

- If PACA_s is equal to enabled, the mobile station shall set PACA_s to disabled and PACA_CANCEL to '0', shall disable the PACA state timer, and should indicate to the user that the PACA call has been canceled.
- The mobile station shall declare an access attempt failure and update its registration variables as specified in 6.6.5.5.3.2.
- The mobile station shall disable its transmitter and enter the *Mobile Station Idle State*.

If PACA_s is equal to enabled, the mobile station shall set PACA_CANCEL to '1' when the user directs the mobile station to cancel a PACA call.

If the mobile station receives a *General Page Message*, the mobile station may determine whether there is a page match (see 6.6.2.3). If a match is declared, the mobile station shall perform the following:

- The mobile station shall abort any access attempt in progress.
- The mobile station shall enter the *Page Response Substate*.
- The mobile station may store the *Data Burst Message* for later transmission.

1 If a mobile station receives any message with a MSG_TYPE specified in Table 7.7.2.3-1
 2 addressed to the mobile station, it shall process the ACK_SEQ and VALID_ACK fields of
 3 layer 2 as specified in 6.6.3.1.2. If, after processing the ACK_SEQ and VALID_ACK fields,
 4 an access attempt is still in progress, the mobile station shall ignore the ACK_REQ field of
 5 layer 2 and the layer 3 fields of the message; otherwise, the mobile station shall process the
 6 ACK_REQ field as described in 6.6.3.1.2 and the layer 3 fields of the message as described
 7 below.

8 If the mobile station is to exit the *System Access State* as a result of processing the layer 3
 9 fields of a message requiring an acknowledgment, the mobile station shall send an
 10 acknowledgment (see 6.6.3.1.2) using the access procedures specified in 6.6.3.1.1 and then
 11 exit the *System Access State*.

12 The following directed messages and orders can be received. If any field value of the
 13 message or order is outside its permissible range, the mobile station may send a *Mobile*
 14 *Station Reject Order* with ORDQ equal to '00000100' (message field not in valid range).

- 15 1. *Authentication Challenge Message*: The mobile station shall respond to the message
 16 as specified in 6.3.12.1.5, regardless of the value of AUTH_S, using the access
 17 procedures specified in 6.6.3.1.1.2.
- 18 2. *Base Station Challenge Confirmation Order*: The mobile station shall respond to the
 19 message as specified in 6.3.12.1.9, using the access procedures specified in
 20 6.6.3.1.1.2.
- 21 3. *Data Burst Message*
- 22 4. *Local Control Order*
- 23 5. *Lock Until Power-Cycled Order*: The mobile station shall disable its transmitter and
 24 record the reason for the *Lock Until Power-Cycled Order* in the mobile station's semi-
 25 permanent memory (LCKRSN_{P-S-P} equals the least significant four bits of ORDQ_r).
 26 The mobile station should notify the user of the locked condition. The mobile
 27 station shall enter the *System Determination Substate* of the *Mobile Station*
 28 *Initialization State* with a lock indication (see 6.6.1.1), and shall not enter the
 29 *System Access State* again until after the next mobile station power-up or until it
 30 has received an *Unlock Order*. This requirement shall take precedence over any
 31 other mobile station requirement specifying entry to the *System Access State*.
- 32 6. *Maintenance Required Order*: The mobile station shall record the reason for the
 33 *Maintenance Required Order* in the mobile station's semi-permanent memory
 34 (MAINTRSN_{S-P} equals the least significant four bits of ORDQ_r). The mobile station
 35 shall remain in the unlocked condition. The mobile station should notify the user of
 36 the maintenance required condition.
- 37 7. *PACA Message*: If P_REV_IN_USE_S is less than or equal to four and the mobile
 38 station does not support PACA capability, the mobile station shall send a *Mobile*
 39 *Station Reject Order* with the ORDQ field set to '00000110' (message requires a
 40 capability that is not supported by the mobile station); otherwise, the mobile station
 41 shall process the message as follows:

If PACA_S is equal to disabled, the mobile station shall send a *Mobile Station Reject Order* with the ORDQ field set to '00000010' (message not accepted in this state).

If PACA_S is equal to enabled, the mobile station shall perform the following:

- If the purpose of the message is to respond to an *Origination Message* (PURPOSE_r is equal to '0000'), the mobile station shall send a *Mobile Station Reject Order* with the ORDQ field set to '00000010' (message not accepted in this state).
- If the purpose of the message is to provide the queue position of the PACA call (PURPOSE_r is equal to '0001'), the mobile station shall set the PACA state timer to the duration shown in Table 7.7.2.3.2.20-2 corresponding to the value of PACA_TIMEOUT_S, should indicate to the user that the PACA call is still queued, and should indicate to the user the current queue position (Q_POS_r) of the call.
- If the purpose of the message is to instruct the mobile station to re-originate the PACA call (PURPOSE_r is equal to '0010'), the mobile station shall abort any access attempt in progress, shall set the PACA state timer to the duration shown in Table 7.7.2.3.2.20-2 corresponding to the value of PACA_TIMEOUT_S, and shall enter the *Mobile Station Origination Attempt Substate* with a PACA response indication.
- If the purpose of the message is to cancel the PACA call (PURPOSE_r is equal to '0011'), the mobile station shall set PACA_S to disabled and PACA_CANCEL to '0', shall disable the PACA state timer, and should indicate to the user that the PACA call has been canceled.

8. *Registration Accepted Order*: If ORDQ_r = '00000101', the mobile station shall set ROAM_IND_S = ROAM_IND_r and should display the roaming condition.

9. *Registration Rejected Order*: This order indicates that normal service is not available on this system. The mobile station shall disable the full-TMSI timer. If the received order specifies to delete the TMSI (ORDQ = '00000100'), the mobile station shall set all the bits of the TMSI_CODE_{S-p} to '1'. The mobile station shall enter the *System Determination Substate* of the *Mobile Station Initialization State* with a registration rejected indication (see 6.6.1.1).

10. *Service Redirection Message*: The mobile station shall process the message as follows:

- If the mobile station is directed to an unsupported operation mode or band class, the mobile station shall respond with a *Mobile Station Reject Order* with ORDQ equal to '00000110' (message requires a capability that is not supported by the mobile station).
- If DELETE_TMSI_r is equal to '1', the mobile station shall set all the bits of TMSI_CODE_{S-p} to '1'. The mobile station shall disable the full-TMSI timer.
- The mobile station shall set RETURN_IF_FAIL_S = RETURN_IF_FAIL_r.

- If RECORD_TYPE_r is equal to '00000000', the mobile station shall enter the *System Determination Substate* of the *Mobile Station Initialization State* with an NDSS off indication (see 6.6.1.1); otherwise, the mobile station shall store the redirection record received in the message as REDIRECT_REC_s and shall enter the *System Determination Substate* of the *Mobile Station Initialization State* with a redirection indication (see 6.6.1.1).

11. *SSD Update Message*: The mobile station shall respond to the message as specified in 6.3.12.1.9, using the access procedures specified in 6.6.3.1.1.2.

12. *Status Request Message*: The mobile station shall disable the *System Access State* timer and respond to the message using the access procedures specified in 6.6.3.1.1.2. If P_REV_IN_USE_s is less than or equal to three, the mobile station shall respond with a *Status Response Message*. If P_REV_IN_USE_s is greater than three, the mobile station shall respond with an *Extended Status Response Message*. If the message does not specify any qualification information (QUAL_INFO_TYPE_r is equal to '00000000'), the mobile station shall include the requested information records in the response. If the message specifies a band class (QUAL_INFO_TYPE_r is equal to '00000001'), the mobile station shall only include the requested information records for the specified band class (BAND_CLASS_r) in the response. If the message specifies a band class and an operating mode (QUAL_INFO_TYPE_r is equal to '00000010'), the mobile station shall only include the requested information records for the specified band class (BAND_CLASS_r) and operating mode (OP_MODE_r) in the response.

If the message specifies a band class or a band class and an operating mode which is not supported by the mobile station, the mobile station shall send a *Mobile Station Reject Order* with ORDQ set to '00000110' (message requires a capability that is not supported by the mobile station). If the response to this message exceeds the allowable length, the mobile station shall send a *Mobile Station Reject Order* with ORDQ set to '00001000' (response message would exceed the allowable length). If the message specifies an information record which is not supported by the mobile station for the specified band class and operating mode, the mobile station shall send a *Mobile Station Reject Order* with ORDQ set to '00001001' (information record is not supported for the specified band class and operating mode).

13. *TMSI Assignment Message*: The mobile station shall store the TMSI zone and code as follows:

- The mobile station shall store the length of the TMSI zone field by setting $\text{ASSIGNING_TMSI_ZONE_LEN}_{s-p}$ to TMSI_ZONE_LEN_r ,
- The mobile station shall store the assigning TMSI zone number by setting the $\text{ASSIGNING_TMSI_ZONE_LEN}_{s-p}$ least significant octets of $\text{ASSIGNING_TMSI_ZONE}_{s-p}$ to TMSI_ZONE_r , and
- The mobile station shall store the TMSI code by setting TMSI_CODE_{s-p} to TMSI_CODE_r .

The mobile station shall set the TMSI expiration time by setting TMSI_EXP_TIME_{s-p} to TMSI_EXP_TIME_r. The mobile station shall disable the full-TMSI timer. The mobile station shall then respond with a *TMSI Assignment Completion Message* within T_{56m} seconds.

14. *Any other message*: If the mobile station receives any other message with a MSG_TYPE specified in Table 7.7.2.3-1, it shall process all layer 2 fields of the message and shall ignore all other fields. The mobile station shall ignore all other messages.

6.6.3.8 PACA Cancel Substate

In this substate, the mobile station sends a *PACA Cancel Message*. If the base station responds with an authentication request, the mobile station responds in this substate.

Upon entering the *PACA Cancel Substate*, the mobile station shall transmit the *PACA Cancel Message* using the access procedures specified in 6.6.3.1.1.2. If message authentication is enabled (see 6.3.12.1), the mobile station shall calculate the values of the AUTHR and RANDC fields using the current value of RAND_s.

While in this substate, the mobile station shall monitor the Paging Channel. If the mobile station declares a loss of the Paging Channel (see 6.4.3), it shall declare an access attempt failure and update its registration variables as specified in 6.6.5.5.3.2, disable its transmitter and enter the *Mobile Station Idle State*. If the mobile station receives an acknowledgment to any message sent by the mobile station in this substate, it shall end the access attempt, send an acknowledgment if required, send a response in this substate if required, and shall then enter the *Mobile Station Idle State*.

If the mobile station receives a *General Page Message*, the mobile station may determine if there is a page match (see 6.6.2.3). If a match is declared, the mobile station shall abort any access attempt in progress and shall enter the *Page Response Substate*.

If a mobile station receives any message with a MSG_TYPE specified in Table 7.7.2.3-1 addressed to the mobile station, it shall process the ACK_SEQ and VALID_ACK fields of layer 2 as specified in 6.6.3.1.2. If, after processing the ACK_SEQ and VALID_ACK fields, an access attempt is still in progress, the mobile station shall ignore the ACK_REQ field of layer 2 and the layer 3 fields of the message; otherwise, the mobile station shall process the ACK_REQ field as described in 6.6.3.1.2 and the layer 3 fields of the message as described below.

If the mobile station is to exit the *System Access State* as a result of processing the layer 3 fields of a message requiring an acknowledgment, the mobile station shall send an acknowledgment (see 6.6.3.1.2) using the access procedures specified in 6.6.3.1.1 and then exit the *System Access State*.

The following directed messages and orders can be received. If any field value of the message or order is outside its permissible range, the mobile station may send a *Mobile Station Reject Order* with ORDQ equal to '00000100' (message field not in valid range).

1. *Authentication Challenge Message*: The mobile station shall respond to the message as specified in 6.3.12.1.5, regardless of the value of $AUTH_S$, using the access procedures specified in 6.6.3.1.1.2.
2. *Base Station Challenge Confirmation Order*: The mobile station shall respond to the message as specified in 6.3.12.1.9, using the access procedures specified in 6.6.3.1.1.2.
3. *Data Burst Message*
4. *Local Control Order*
5. *Lock Until Power-Cycled Order*: The mobile station shall disable its transmitter and record the reason for the *Lock Until Power-Cycled Order* in the mobile station's semi-permanent memory ($LCKRSN_{S-p}$ equals the least significant four bits of $ORDQ_r$). The mobile station should notify the user of the locked condition. The mobile station shall enter the *System Determination Substate* of the *Mobile Station Initialization State* with a lock indication (see 6.6.1.1), and shall not enter the *System Access State* again until after the next mobile station power-up or until it has received an *Unlock Order*. This requirement shall take precedence over any other mobile station requirement specifying entry to the *System Access State*.
6. *Maintenance Required Order*: The mobile station shall record the reason for the *Maintenance Required Order* in the mobile station's semi-permanent memory ($MAINTRSN_{S-p}$ equals the least significant four bits of $ORDQ_r$). The mobile station shall remain in the unlocked condition. The mobile station should notify the user of the maintenance required condition.
7. *PACA Message*: The mobile station shall send a *Mobile Station Reject Order* with the $ORDQ$ field set to '00000010' (message not accepted in this state).
8. *Registration Accepted Order*: If $ORDQ_r = '00000101'$, the mobile station shall set $ROAM_INDI_S = ROAM_INDI_r$ and should display the roaming condition.
9. *Registration Rejected Order*: This order indicates that normal service is not available on this system. The mobile station shall disable the full-TMSI timer. If the received order specifies to delete the TMSI ($ORDQ = '00000100'$), the mobile station shall set all the bits of the $TMSI_CODE_{S-p}$ to '1'. The mobile station shall enter the *System Determination Substate* of the *Mobile Station Initialization State* with a registration rejected indication (see 6.6.1.1).
10. *Service Redirection Message*: The mobile station shall process the message as follows:
 - If the mobile station is directed to an unsupported operation mode or band class, the mobile station shall respond with a *Mobile Station Reject Order* with $ORDQ$ equal to '00000110' (message requires a capability that is not supported by the mobile station).
 - If $DELETE_TMSI_r$ is equal to '1', the mobile station shall set all the bits of $TMSI_CODE_{S-p}$ to '1'. The mobile station shall disable the full-TMSI timer.
 - The mobile station shall set $RETURN_IF_FAIL_S = RETURN_IF_FAIL_r$.

- 1 • If RECORD_TYPE_r is equal to '00000000', the mobile station shall enter the
2 *System Determination Substate* of the *Mobile Station Initialization State* with an
3 NDSS off indication (see 6.6.1.1); otherwise, the mobile station shall store the
4 redirection record received in the message as REDIRECT_REC_s and shall enter
5 the *System Determination Substate* of the *Mobile Station Initialization State* with a
6 redirection indication (see 6.6.1.1).
- 7 11. *SSD Update Message*: The mobile station shall respond to the message as specified
8 in 6.3.12.1.9, using the access procedures specified in 6.6.3.1.1.2.
- 9 12. *Status Request Message*: The mobile station shall disable the *System Access State*
10 timer and respond to the message using the access procedures specified in
11 6.6.3.1.1.2. If P_REV_IN_USE_s is less than or equal to three, the mobile station
12 shall respond with a *Status Response Message*. If P_REV_IN_USE_s is greater than
13 three, the mobile station shall respond with an *Extended Status Response Message*.
14 If the message does not specify any qualification information (QUAL_INFO_TYPE_r is
15 equal to '00000000'), the mobile station shall include the requested information
16 records in the response. If the message specifies a band class (QUAL_INFO_TYPE_r
17 is equal to '00000001'), the mobile station shall only include the requested
18 information records for the specified band class (BAND_CLASS_r) in the response. If
19 the message specifies a band class and an operating mode (QUAL_INFO_TYPE_r is
20 equal to '00000010'), the mobile station shall only include the requested information
21 records for the specified band class (BAND_CLASS_r) and operating mode
22 (OP_MODE_r) in the *Status Response Message*.

23 If the message specifies a band class or a band class and an operating mode which
24 is not supported by the mobile station, the mobile station shall send a *Mobile*
25 *Station Reject Order* with ORDQ set to '00000110' (message requires a capability
26 that is not supported by the mobile station). If the response to this message
27 exceeds the allowable length, the mobile station shall send a *Mobile Station Reject*
28 *Order* with ORDQ set to '00001000' (response message would exceed the allowable
29 length). If the message specifies an information record which is not supported by
30 the mobile station for the specified band class and operating mode, the mobile
31 station shall send a *Mobile Station Reject Order* with ORDQ set to '00001001'
32 (information record is not supported for the specified band class and operating
33 mode).
- 34 13. *TMSI Assignment Message*: The mobile station shall store the TMSI zone and code
35 as follows:
 - 36 • The mobile station shall store the length of the TMSI zone field by setting
37 ASSIGNING_TMSI_ZONE_LEN_{s-p} to TMSI_ZONE_LEN_r,
 - 38 • The mobile station shall store the assigning TMSI zone number by setting the
39 ASSIGNING_TMSI_ZONE_LEN_{s-p} least significant octets of
40 ASSIGNING_TMSI_ZONE_{s-p} to TMSI_ZONE_r, and
 - 41 • The mobile station shall store the TMSI code by setting TMSI_CODE_{s-p} to
42 TMSI_CODE_r.

1 The mobile station shall set the TMSI expiration time by setting TMSI_EXP_TIME_{s-p}
 2 to TMSI_EXP_TIME_r. The mobile station shall disable the full-TMSI timer. The
 3 mobile station shall then respond with a *TMSI Assignment Completion Message*
 4 within T_{56m} seconds.

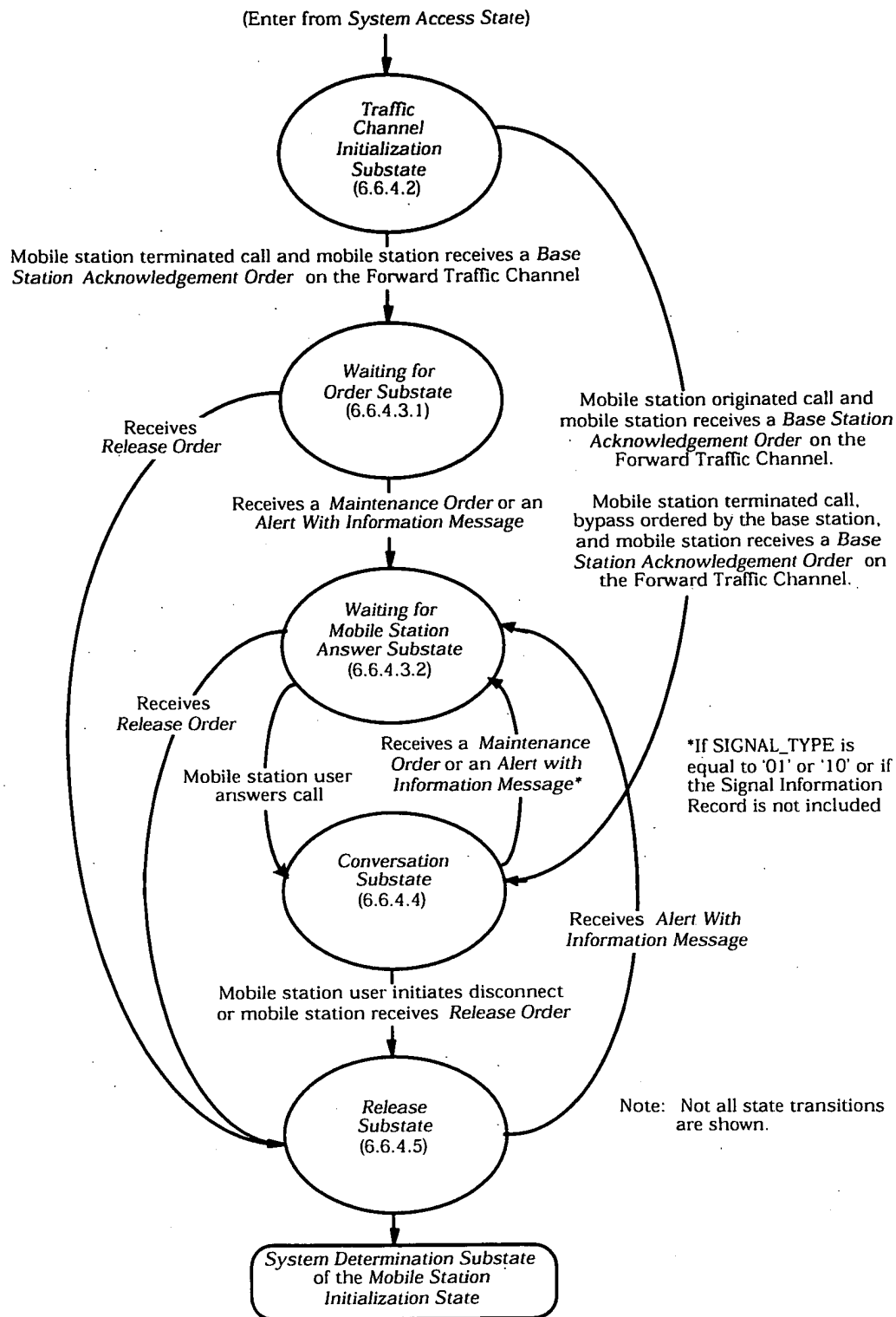
- 5 14. *Any other message*: If the mobile station receives any other message with a
 6 MSG_TYPE specified in Table 7.7.2.3-1, it shall process all layer 2 fields of the
 7 message and shall ignore all other fields. The mobile station shall ignore all other
 8 messages.

9 6.6.4 Mobile Station Control on the Traffic Channel State

10 In this state, the mobile station communicates with the base station using the Forward and
 11 Reverse Traffic Channels.

12 As illustrated in Figure 6.6.4-1, the *Mobile Station Control on the Traffic Channel State*
 13 consists of the following substates:

- 14 • *Traffic Channel Initialization Substate* - In this substate, the mobile station verifies
 15 that it can receive the Forward Traffic Channel and begins transmitting on the
 16 Reverse Traffic Channel.
- 17 • *Waiting for Order Substate* - In this substate, the mobile station waits for an *Alert*
 18 *With Information Message*.
- 19 • *Waiting for Mobile Station Answer Substate* - In this substate, the mobile station
 20 waits for the user to answer the call.
- 21 • *Conversation Substate* - In this substate, the mobile station exchanges Traffic
 22 Channel frames with the base station in accordance with the current service
 23 configuration.
- 24 • *Release Substate* - In this substate, the mobile station disconnects the call.



1
2

Figure 6.6.4-1. Mobile Station Control on the Traffic Channel State

6.6.4.1 Special Functions and Actions

The mobile station performs special functions and actions in one or more of the substates of the *Mobile Station Control on the Traffic Channel State*.

6.6.4.1.1 Forward Traffic Channel Power Control

To support Forward Traffic Channel power control, the mobile station reports frame error rate statistics to the base station. If the base station enables periodic reporting, the mobile station reports frame error rate statistics at specified intervals. If the base station enables threshold reporting, the mobile station reports frame error rate statistics when the frame error rate reaches a specified threshold.⁶

The mobile station shall maintain a counter (TOT_FRAMES_S) for the total number of frames received on the Forward Fundamental Code Channel and a counter (BAD_FRAMES_S) for the number of received bad frames on the Forward Fundamental Code Channel, where bad frames are defined in 6.2.2.2.

The mobile station shall perform the following for each received frame:

- The mobile station shall increment TOT_FRAMES_S by 1.
- If the received frame is bad, the mobile station shall increment BAD_FRAMES_S by 1.
- If either
 - PWR_THRESH_ENABLE_S is equal to '1' and BAD_FRAMES_S is equal to PWR_REP_THRESH_S or
 - PWR_PERIOD_ENABLE_S is equal to '1' and TOT_FRAMES_S is equal to $\lfloor (2(\text{PWR_REP_FRAMES}_S/2) \times 5) \rfloor$,
 then the mobile station shall send a *Power Measurement Report Message* to the base station. The mobile station should send the *Power Measurement Report Message* as a message not requiring acknowledgment. After sending a *Power Measurement Report Message*, the mobile station shall set TOT_FRAMES_S and BAD_FRAMES_S to zero and shall not increment either counter for a period of PWR_REP_DELAY_S × 4 frames following the first transmission of the message.
- If TOT_FRAMES_S is equal to $\lfloor (2(\text{PWR_REP_FRAMES}_S/2) \times 5) \rfloor$, the mobile station shall set TOT_FRAMES_S and BAD_FRAMES_S to zero.

6.6.4.1.1.1 Forward Traffic Channel Power Control Initialization

To initialize Forward Traffic Channel power control, the mobile station shall set TOT_FRAMES_S and BAD_FRAMES_S to zero.

⁶ Periodic reporting and threshold reporting may be independently enabled or disabled by the base station.

6.6.4.1.1.2 Processing the Power Control Parameters Message

The mobile station shall store the following parameters from the *Power Control Parameters Message*:

- Power control reporting threshold ($PWR_REP_THRESH_S = PWR_REP_THRESH_T$)
- Power control reporting frame count ($PWR_REP_FRAMES_S = PWR_REP_FRAMES_T$)
- Threshold report mode indicator
($PWR_THRESH_ENABLE_S = PWR_THRESH_ENABLE_T$)
- Periodic report mode indicator
($PWR_PERIOD_ENABLE_S = PWR_PERIOD_ENABLE_T$)
- Power report delay ($PWR_REP_DELAY_S = PWR_REP_DELAY_T$)

The mobile station shall set TOT_FRAMES_S and BAD_FRAMES_S to zero.

6.6.4.1.2 Service Configuration and Negotiation

During Traffic Channel operation, the mobile station and base station communicate through the exchange of Forward and Reverse Traffic Channel frames. The mobile station and base station use a common set of attributes for building and interpreting Traffic Channel frames. This set of attributes, referred to as a service configuration, consists of the following:

1. *Forward and Reverse Multiplex Options*: These control the way in which the information bits of the Forward and Reverse Traffic Channel frames, respectively, are divided into various types of traffic, such as signaling traffic, primary traffic and secondary traffic. Associated with each multiplex option is a rate set which specifies the frame structures and transmission rates supported by the multiplex option (see, for example, 6.1.3.3.11). Multiplex Option 3 through 16 also indicates the capability for supporting Supplemental Code Channel transmission on the Forward and Reverse Traffic Channels. Invocation of Supplemental Code Channel operation on the Forward or Reverse Traffic Channels occurs by the *Supplemental Channel Request Message*, the *Supplemental Channel Assignment Message*, and the *General Handoff Direction Message*). The multiplex option used for the Forward Traffic Channel can be the same as that used for the Reverse Traffic Channel, or it can be different.
2. *Forward and Reverse Traffic Channel Transmission Rates*: These are the transmission rates actually used for the Forward and Reverse Traffic Channels respectively. The transmission rates for the Forward Traffic Channel can include all of the transmission rates supported by the rate set associated with the Forward Traffic Channel multiplex option, or a subset of the supported rates. Similarly, the transmission rates used for the Reverse Traffic Channel can include all rates supported by the rate set associated with the Reverse Traffic Channel multiplex option, or a subset of the supported rates. The transmission rates used for the Forward Traffic Channel can be the same as those used for the Reverse Traffic Channel, or they can be different.

3. *Service Option Connections*: These are the services in use on the Traffic Channel. It is possible that there is no service option connection, in which case the mobile station and base station use the Forward and Reverse Traffic Channels to send only signaling traffic and null Traffic Channel data; or there can be one or multiple service option connections.

Associated with each service option connection are a service option, a Forward Traffic Channel traffic type, a Reverse Traffic Channel traffic type and a service option connection reference. The associated service option formally defines the way in which traffic bits are processed by the mobile station and base station. The associated Forward and Reverse Traffic Channel traffic types specify the types of traffic used to support the service option. A service option can require the use of a particular type of traffic, such as primary or secondary, or it can accept more than one traffic type. A service option can be one-way, in which case it can be supported on the Forward Traffic Channel only or the Reverse Traffic Channel only.

Alternatively, a service option can be two-way, in which case it can be supported on the Forward and Reverse Traffic Channels simultaneously. Connected service options can also invoke operation on Supplemental Code Channels in either one or both of the Forward and Reverse Traffic Channels by negotiating a multiplex option that supports operation on Supplemental Code Channels (Multiplex Options 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, or 16), and by using the appropriate Supplemental Code Channel assignment messages (i.e., the *Supplemental Channel Request Message*, the *Supplemental Channel Assignment Message*, and the *General Handoff Direction Message*). After Supplemental Code Channels have been assigned by the base station, the connected service option can transmit primary and/or secondary traffic on Supplemental Code Channels. The associated service option connection reference provides a means for uniquely identifying the service option connection. The reference serves to resolve ambiguity when there are multiple service option connections in use.

The mobile station can request a default service configuration associated with a service option at call origination, and can request new service configurations during Traffic Channel operation. A requested service configuration can differ greatly from its predecessor or can be very similar. For example, the mobile station can request a service configuration in which all of the service option connections are different from those of the existing configuration; or the mobile station can request a service configuration in which the existing service option connections are maintained with only minor changes, such as a different set of transmission rates or a different mapping of service option connections to Forward and Reverse Traffic Channel traffic types.

If the mobile station requests a service configuration that is acceptable to the base station, they both begin using the new service configuration. If the mobile station requests a service configuration that is not acceptable to the base station, the base station can reject the requested service configuration or propose an alternative service configuration. If the base station proposes an alternative service configuration, the mobile station can accept or reject the base station's proposed service configuration, or propose yet another service configuration. This process, called service negotiation, ends when the mobile station and

the base station find a mutually acceptable service configuration, or when either the mobile station or the base station rejects a service configuration proposed by the other.

It is also possible for the base station to request a default service configuration associated with a service option when paging the mobile station and to request new service configurations during Traffic Channel operation. The service negotiation proceeds as described above, but with the roles of the mobile station and base station reversed.

For CDMA mode operation in Band Class 0, the mobile station and base station can also use an alternative method for negotiating a service configuration known as service option negotiation. Service option negotiation is similar to service negotiation, but offers less flexibility for specifying the attributes of the service configuration. During service option negotiation, the base station or the mobile station specifies only which service option is to be used. There is no facility for explicitly specifying the multiplex options, traffic types or transmission rates to be used on the Forward and Reverse Traffic Channels in conjunction with the service option. Instead, implicit service configuration attributes are assumed. In particular, the Forward and Reverse multiplex options and transmission rates are assumed to be the default multiplex options and transmission rates associated with the requested service option, and the traffic type for both the Forward and Reverse Traffic Channels is assumed to be primary traffic; furthermore, a service configuration established using service option negotiation is restricted to having only a single service option connection.

At mobile station origination and termination, the type of negotiation to use, either service negotiation or service option negotiation, is indicated in the *Channel Assignment Message*. Service negotiation is always used after the mobile station receives an *Extended Channel Assignment Message*. If a CDMA-to-CDMA hard handoff occurs during the call, the type of negotiation to use following the handoff is indicated in the *Extended Handoff Direction Message* or the *General Handoff Direction Message*.

For CDMA mode operation in Band Class 1, only service negotiation is to be used.

The following messages are used to support service negotiation:

1. *Service Request Message*: The mobile station can use this message to propose a service configuration, or to accept or reject a service configuration proposed in a *Service Response Message*. The base station can use this message to propose a service configuration, or to reject a service configuration proposed in a *Service Response Message*.
2. *Service Response Message*: The mobile station can use this message to accept or reject a service configuration proposed in a *Service Request Message*, or to propose an alternative service configuration. The base station can use this message to reject a service configuration proposed in a *Service Request Message*, or to propose an alternative service configuration.
3. *Service Connect Message*: The base station can use this message to accept a service configuration proposed in a *Service Request Message* or *Service Response Message*, and to instruct the mobile station to begin using the service configuration.
4. *Service Connect Completion Message*: The mobile station can use this message to acknowledge the transition to a new service configuration.

- 1 5. *Service Option Control Message*: The mobile station and base station can use this
2 message to invoke service-option-specific functions.
- 3 6. *Extended Channel Assignment Message*: The base station can use this message to
4 accept or reject the initial service configuration proposed by the mobile station in an
5 *Origination Message* or a *Page Response Message*.

6 The following messages are used to support service option negotiation:

- 7 1. *Service Option Request Order*: The mobile station and base station can use this
8 message either to request a service option or to suggest an alternative service
9 option.
- 10 2. *Service Option Response Order*: The mobile station and base station can use this
11 message to accept or to reject a service option request.
- 12 3. *Service Option Control Order*: The mobile station and base station can use this
13 message to invoke service option specific functions.

14 The following messages are used to support both service negotiation and service option
15 negotiation:

- 16 1. *Origination Message*: The mobile station can use this message to propose an initial
17 service configuration.
- 18 2. *Channel Assignment Message*: The base station can use this message to accept or
19 to reject the initial service configuration proposed by the mobile station in an
20 *Origination Message* or a *Page Response Message* and to indicate which type of
21 negotiation, either service negotiation or service option negotiation, is to be used
22 during the call.
- 23 3. *Extended Handoff Direction Message*: The base station can use this message to
24 indicate which type of negotiation, either service negotiation or service option
25 negotiation, is to be used following a CDMA-to-CDMA hard handoff.
- 26 4. *General Handoff Direction Message*: The base station can use this message to
27 indicate which type of negotiation, either service negotiation or service option
28 negotiation, is to be used following a CDMA-to-CDMA hard handoff. The base
29 station can use this message to accept a service configuration proposed in a *Service*
30 *Request Message* or *Service Response Message*. The base station can also use this
31 message to instruct the mobile station to begin using the service configuration.
- 32 5. *General Page Message*: The base station can use this message to propose an initial
33 service configuration.
- 34 6. *Page Response Message*: The mobile station can use this message to accept or to
35 reject the initial service configuration proposed by the base station in a *General*
36 *Page Message*, or to propose an alternative initial service configuration.
- 37 7. *Status Request Message*: The base station can use this message to request service
38 capability information from the mobile station.

8. *Status Response Message*: The mobile station can use this message to return the service capability information requested by the base station in a *Status Request Message*.

9. *Extended Status Response Message*: The mobile station can use this message to return the service capability information requested by the base station in a *Status Request Message*.

6.6.4.1.2.1 Use of Variables

6.6.4.1.2.1.1 Maintaining the Service Request Sequence Number

The mobile station shall maintain a service request sequence number variable, $SERV_REQ_NUM_S$ for use with service negotiation. Upon entering the *Mobile Station Control on the Traffic Channel State*, the mobile station shall set $SERV_REQ_NUM_S$ to 0. Each time the mobile station sends a new *Service Request Message*, it shall set the $SERV_REQ_SEQ$ field of the message to the current value of $SERV_REQ_NUM_S$, and shall then set $SERV_REQ_NUM_S$ equal to $(SERV_REQ_NUM_S + 1)$ modulo 8.

6.6.4.1.2.1.2 Maintaining the Service Negotiation Indicator Variable

The mobile station shall maintain a service negotiation indicator variable, $SERV_NEG_S$, to indicate which type of negotiation to use, either service negotiation or service option negotiation. The mobile station shall set $SERV_NEG_S$ to enabled whenever service negotiation is to be used, and shall set $SERV_NEG_S$ to disabled whenever service option negotiation is to be used. The precise rules for setting $SERV_NEG_S$ are specified in 6.6.4.2 and 6.6.6.2.5.1.

For CDMA operation in Band Class 1, the mobile station shall set $SERV_NEG_S$ to enabled.

6.6.4.1.2.1.3 Maintaining the Service Option Request Number

The mobile station shall maintain a service option request number variable, SO_REQ_S , for use with service option negotiation. The mobile station shall set SO_REQ_S to a special value, NULL, if the mobile station does not have an outstanding service option request. If the mobile station has an outstanding service option request, the mobile station shall set SO_REQ_S to the number of the service option associated with the outstanding request.

6.6.4.1.2.2 Service Subfunctions

As illustrated in Figure 6.6.4.1.2.2-1, the mobile station supports service configuration and negotiation by performing the following set of service subfunctions:

- *Normal Service Subfunction* - While this subfunction is active, the mobile station processes service configuration requests from the user and from the base station.
- *Waiting for Service Request Message Subfunction* - While this subfunction is active, the mobile station waits to receive a *Service Request Message*.
- *Waiting for Service Response Message Subfunction* - While this subfunction is active, the mobile station waits to receive a *Service Response Message*.

- 1 • *Waiting for Service Connect Message Subfunction* - While this subfunction is active,
2 the mobile station waits to receive a *Service Connect Message* or a *General Handoff*
3 *Direction Message* containing a service configuration record.
 - 4 • *Waiting for Service Action Time Subfunction* - While this subfunction is active, the
5 mobile station waits for the action time associated with a new service configuration
6 and then sends a *Service Connect Completion Message*.
 - 7 • *SO Negotiation Subfunction* - While this subfunction is active, the mobile station
8 supports service option negotiation with the base station. This subfunction is only
9 used while operating in Band Class 0.
- 10 The *SO Negotiation Subfunction* supports service option negotiation. All of the other service
11 subfunctions support service negotiation.
- 12 At any given time during Traffic Channel operation, only one of the service subfunctions is
13 active. For example, when the mobile station first enters the *Traffic Channel Initialization*
14 *Substate* of the *Mobile Station Control on the Traffic Channel State*, the *Normal Service*
15 *Subfunction*, the *Waiting for Service Connect Message Subfunction* or the *SO Negotiation*
16 *Subfunction* is active. Each of the other service subfunctions may become active in
17 response to various events which occur during the Traffic Channel substates. Typically,
18 the mobile station processes events pertaining to service configuration and negotiation in
19 accordance with the requirements for the active service subfunction, however, some Traffic
20 Channel substates do not allow for the processing of certain events pertaining to service
21 configuration and negotiation, or specify requirements for processing such events which
22 supersede the requirements of the active service subfunction.

23

6.6.4.1.2.2.1 Normal Service Subfunction

While this subfunction is active, the mobile station processes service configuration requests from the user and from the base station.

While the *Normal Service Subfunction* is active, the mobile station shall perform the following:

- The mobile station shall process Forward and Reverse Traffic Channel frames in accordance with the current service configuration. The mobile station shall discard any Forward Traffic Channel frame which has a format that is not supported by the mobile station. The mobile station may discard any type of Forward Traffic Channel traffic that is not signaling traffic and is not part of the current service configuration.
- To initiate service negotiation for a new service configuration, the mobile station shall send a *Service Request Message* to propose the new service configuration. The mobile station shall activate the *Waiting for Service Response Message Subfunction*.
- For any service option connection that is part of the current service configuration, the mobile station may send a *Service Option Control Message* to invoke a service option specific function in accordance with the requirements for the associated service option.
- If SERV_NEG_S changes from enabled to disabled (see 6.6.6.2.5.1), the mobile station shall activate the *SO Negotiation Subfunction*.
- If the mobile station receives one of the following service negotiation messages, the mobile station shall process the message according to the specified requirements:
 1. *Service Connect Message*: If the mobile station accepts the service configuration specified in the message, the mobile station shall activate the *Waiting for Service Action Time Subfunction*; otherwise, the mobile station shall send a *Mobile Station Reject Order* (ORDQ = '00000111') within T_{56m} seconds.
 2. *Service Option Control Message*: If the service option connection specified by the message is part of the current service configuration, and the service option specified by the message is the same as the service option associated with the service option connection, the mobile station shall interpret the action time of the message as specified in 6.6.4.1.5, and shall process the message in accordance with the requirements for the service option; otherwise, the mobile station shall send a *Mobile Station Reject Order* (ORDQ = '00000111') within T_{56m} seconds.
 3. *Service Request Message*: The mobile station shall process the message as follows:
 - If the purpose of the message is to reject a proposed service configuration, the mobile station shall send a *Mobile Station Reject Order* (ORDQ = '00000010') within T_{56m} seconds.

- If the purpose of the message is to propose a service configuration, the mobile station shall process the message as follows:
 - + If the mobile station accepts the proposed service configuration, the mobile station shall send a *Service Response Message* to accept the proposed service configuration within T_{59m} seconds. The mobile station shall activate the *Waiting for Service Connect Message Subfunction*.
 - + If the mobile station does not accept the proposed service configuration and does not have an alternative service configuration to propose, the mobile station shall send a *Service Response Message* to reject the proposed service configuration within T_{59m} seconds.
 - + If the mobile station does not accept the proposed service configuration and has an alternative service configuration to propose, the mobile station shall send a *Service Response Message* to propose the alternative service configuration within T_{59m} seconds. The mobile station shall activate the *Waiting for Service Request Message Subfunction*.

4. *Service Response Message*: The mobile station shall send a *Mobile Station Reject Order* (ORDQ = '00000010') within T_{56m} seconds.

5. *General Handoff Direction Message*: If the mobile station accepts the service configuration specified in the message, the mobile station shall activate the *Waiting for Service Action Time Subfunction*; otherwise, the mobile station shall send a *Mobile Station Reject Order* (ORDQ = '00000111') within T_{56m} seconds.

- If the mobile station receives one of the following service option negotiation messages, the mobile station shall send a *Mobile Station Reject Order* (ORDQ = '00000010') within T_{56m} seconds:

1. *Service Option Request Order*
2. *Service Option Response Order*
3. *Service Option Control Order*

6.6.4.1.2.2.2 Waiting for Service Request Message Subfunction

While this subfunction is active, the mobile station waits to receive a *Service Request Message*.

Upon activation of the *Waiting for Service Request Message Subfunction*, the mobile station shall set the subfunction timer for T_{68m} seconds.

While the *Waiting for Service Request Message Subfunction* is active, the mobile station shall perform the following:

- If the subfunction timer expires, the mobile station shall activate the *Normal Service Subfunction*.

- 1 • The mobile station shall process Forward and Reverse Traffic Channel frames in
2 accordance with the current service configuration. The mobile station shall discard
3 any Forward Traffic Channel frame which has a format that is not supported by the
4 mobile station. The mobile station may discard any type of Forward Traffic Channel
5 traffic that is not signaling traffic and is not part of the current service
6 configuration.
- 7 • The mobile station shall not initiate service negotiation for a new service
8 configuration.
- 9 • For any service option connection that is part of the current service configuration,
10 the mobile station may send a *Service Option Control Message* to invoke a service
11 option specific function in accordance with the requirements for the associated
12 service option.
- 13 • If SERV_NEG_s changes from enabled to disabled (see 6.6.6.2.5.1), the mobile station
14 shall activate the *SO Negotiation Subfunction*.
- 15 • If the mobile station receives one of the following service negotiation messages, the
16 mobile station shall process the message according to the specified requirements:
 - 17 1. *Service Connect Message*: If the mobile station accepts the service configuration
18 specified in the message, the mobile station shall activate the *Waiting for Service*
19 *Action Time Subfunction*; otherwise, the mobile station shall send a *Mobile*
20 *Station Reject Order* (ORDQ = '00000111') within T_{56m} seconds and shall
21 activate the *Normal Service Subfunction*.
 - 22 2. *Service Option Control Message*: If the service option connection specified by the
23 message is part of the current service configuration, and the service option
24 specified by the message is the same as the service option associated with the
25 service option connection, the mobile station shall interpret the action time of
26 the message as specified in 6.6.4.1.5, and shall process the message in
27 accordance with the requirements for the service option; otherwise, the mobile
28 station shall send a *Mobile Station Reject Order* (ORDQ = '00000111') within
29 T_{56m} seconds.
 - 30 3. *Service Request Message*: The mobile station shall process the message as
31 follows:
 - 32 – If the purpose of the message is to reject a proposed service configuration,
33 the mobile station shall activate the *Normal Service Subfunction*.
 - 34 – If the purpose of the message is to propose a service configuration, the
35 mobile station shall process the message as follows:
 - 36 + If the mobile station accepts the proposed service configuration, the
37 mobile station shall send a *Service Response Message* to accept the
38 proposed service configuration within T_{59m} seconds. The mobile station
39 shall activate the *Waiting for Service Connect Message Subfunction*.

- 1 + If the mobile station does not accept the proposed service configuration
2 and does not have an alternative service configuration to propose, the
3 mobile station shall send a *Service Response Message* to reject the
4 proposed service configuration within T_{59m} seconds. The mobile station
5 shall activate the *Normal Service Subfunction*.
- 6 + If the mobile station does not accept the proposed service configuration
7 and has an alternative service configuration to propose, the mobile
8 station shall send a *Service Response Message* to propose the alternative
9 service configuration within T_{59m} seconds. The mobile station shall
10 reset the subfunction timer for T_{68m} seconds.
- 11 4. *Service Response Message*: The mobile station shall send a *Mobile Station Reject*
12 *Order* (ORDQ = '00000010') within T_{56m} seconds.
- 13 5. *General Handoff Direction Message*: If the message contains a service
14 configuration record, and if the mobile station accepts the service configuration
15 specified in the message, the mobile station shall activate the *Waiting for Service*
16 *Action Time Subfunction*; otherwise, the mobile station shall send a *Mobile*
17 *Station Reject Order* (ORDQ = '00000111') within T_{56m} seconds, and shall
18 activate the *Normal Service Subfunction*.
- 19 • If the mobile station receives one of the following service option negotiation
20 messages, the mobile station shall send a *Mobile Station Reject Order* (ORDQ =
21 '00000010') within T_{56m} seconds:
 - 22 1. *Service Option Request Order*
 - 23 2. *Service Option Response Order*
 - 24 3. *Service Option Control Order*

25 6.6.4.1.2.2.3 Waiting for Service Response Message Subfunction

26 While this subfunction is active, the mobile station waits to receive a *Service Response*
27 *Message*.

28 Upon activation of the *Waiting for Service Response Message Subfunction*, the mobile station
29 shall set the subfunction timer for T_{68m} seconds.

30 While the *Waiting for Service Response Message Subfunction* is active, the mobile station
31 shall perform the following:

- 32 • If the subfunction timer expires, the mobile station shall activate the *Normal Service*
33 *Subfunction*.
- 34 • The mobile station shall process Forward and Reverse Traffic Channel frames in
35 accordance with the current service configuration. The mobile station shall discard
36 any Forward Traffic Channel frame which has a format that is not supported by the
37 mobile station. The mobile station may discard any type of Forward Traffic Channel
38 traffic that is not signaling traffic and is not part of the current service
39 configuration.

- 1 • The mobile station shall not initiate service negotiation for a new service
2 configuration.
- 3 • For any service option connection that is part of the current service configuration,
4 the mobile station may send a *Service Option Control Message* to invoke a service
5 option specific function in accordance with the requirements for the associated
6 service option.
- 7 • If SERV_NEG_S changes from enabled to disabled (see 6.6.6.2.5.1), the mobile station
8 shall activate the *SO Negotiation Subfunction*.
- 9 • If the mobile station receives one of the following service negotiation messages, the
10 mobile station shall process the message according to the specified requirements:
 - 11 1. *Service Connect Message*: If the mobile station accepts the service configuration
12 specified in the message, the mobile station shall activate the *Waiting for Service*
13 *Action Time Subfunction*; otherwise, the mobile station shall send a *Mobile*
14 *Station Reject Order* (ORDQ = '00000111') within T_{56m} seconds and shall
15 activate the *Normal Service Subfunction*.
 - 16 2. *Service Option Control Message*: If the service option connection specified by the
17 message is part of the current service configuration, and the service option
18 specified by the message is the same as the service option associated with the
19 service option connection, the mobile station shall interpret the action time of
20 the message as specified in 6.6.4.1.5, and shall process the message in
21 accordance with the requirements for the service option; otherwise, the mobile
22 station shall send a *Mobile Station Reject Order* (ORDQ = '00000111') within
23 T_{56m} seconds.
 - 24 3. *Service Request Message*: The mobile station shall process the message as
25 follows:
 - 26 – If the purpose of the message is to reject a proposed service configuration,
27 the mobile station shall send a *Mobile Station Reject Order* (ORDQ =
28 '00000010') within T_{56m} seconds.
 - 29 – If the purpose of the message is to propose a service configuration, the
30 mobile station shall discontinue processing the service configuration
31 requested by the user and shall process the message as follows:
 - 32 + If the mobile station accepts the proposed service configuration, the
33 mobile station shall send a *Service Response Message* to accept the
34 proposed service configuration within T_{59m} seconds. The mobile station
35 shall activate the *Waiting for Service Connect Message Subfunction*.
 - 36 + If the mobile station does not accept the proposed service configuration
37 and does not have an alternative service configuration to propose, the
38 mobile station shall send a *Service Response Message* to reject the
39 proposed service configuration within T_{59m} seconds. The mobile station
40 shall activate the *Normal Service Subfunction*.

- + If the mobile station does not accept the proposed service configuration and has an alternative service configuration to propose, the mobile station shall send a *Service Response Message* to propose the alternative service configuration within T_{59m} seconds. The mobile station shall activate the *Waiting for Service Request Message Subfunction*.
- 4. *Service Response Message*: The mobile station shall process the message as follows:
 - If the service request sequence number ($SERV_REQ_SEQ_r$) from the message does not match the sequence number of the *Service Request Message* for which the mobile station is expecting a response, the mobile station shall not process the other layer 3 fields of the message.
 - If the purpose of the message is to reject the service configuration proposed in the corresponding *Service Request Message*, the mobile station shall activate the *Normal Service Subfunction*. The mobile station may indicate to the user that the requested service configuration has been rejected.
 - If the purpose of the message is to propose a service configuration, the mobile station shall process the message as follows:
 - + If the mobile station accepts the proposed service configuration, the mobile station shall send a *Service Request Message* to accept the proposed service configuration within T_{59m} seconds. The mobile station shall activate the *Waiting for Service Connect Message Subfunction*.
 - + If the mobile station does not accept the proposed service configuration and does not have an alternative service configuration to propose, the mobile station shall send a *Service Request Message* to reject the proposed service configuration within T_{59m} seconds. The mobile station shall activate the *Normal Service Subfunction*.
 - + If the mobile station does not accept the proposed service configuration and has an alternative service configuration to propose, the mobile station shall send a *Service Request Message* to propose the alternative service configuration within T_{59m} seconds. The mobile station shall reset the subfunction timer for T_{68m} seconds.
- 5. *General Handoff Direction Message*: If the message contains a service configuration record and the mobile station accepts the service configuration specified in the message, the mobile station shall activate the *Waiting for Service Action Time Subfunction*; otherwise, the mobile station shall send a *Mobile Station Reject Order* ($ORDQ = '00000111'$) within T_{56m} seconds and shall activate the *Normal Service Subfunction*.
- If the mobile station receives one of the following service option negotiation messages, the mobile station shall send a *Mobile Station Reject Order* ($ORDQ = '00000010'$) within T_{56m} seconds:
 1. *Service Option Request Order*

2. *Service Option Response Order*

3. *Service Option Control Order*

6.6.4.1.2.2.4 *Waiting for Service Connect Message Subfunction*

While this subfunction is active, the mobile station waits to receive a *Service Connect Message*.

Upon activation of the *Waiting for Service Connect Message Subfunction*, the mobile station shall set the subfunction timer for T_{65m} seconds.

While the *Waiting for Service Connect Message Subfunction* is active, the mobile station shall perform the following:

- If the subfunction timer expires, the mobile station shall activate the *Normal Service Subfunction*.
- The mobile station shall process Forward and Reverse Traffic Channel frames in accordance with the current service configuration. The mobile station shall discard any Forward Traffic Channel frame which has a format that is not supported by the mobile station. The mobile station may discard any type of Forward Traffic Channel traffic that is not signaling traffic and is not part of the current service configuration.
- The mobile station shall not initiate service negotiation for a new service configuration.
- For any service option connection that is part of the current service configuration, the mobile station may send a *Service Option Control Message* to invoke a service option specific function in accordance with the requirements for the associated service option.
- If $SERV_NEG_S$ changes from enabled to disabled (see 6.6.6.2.5.1), the mobile station shall activate the *SO Negotiation Subfunction*.
- If the mobile station receives one of the following service negotiation messages, the mobile station shall process the message according to the specified requirements:
 1. *Service Connect Message*: If the mobile station accepts the service configuration specified in the message, the mobile station shall activate the *Waiting for Service Action Time Subfunction*; otherwise, the mobile station shall send a *Mobile Station Reject Order* ($ORDQ = '00000111'$) within T_{56m} seconds and shall activate the *Normal Service Subfunction*.
 2. *Service Option Control Message*: If the service option connection specified by the message is part of the current service configuration, and the service option specified by the message is the same as the service option associated with the service option connection, the mobile station shall interpret the action time of the message as specified in 6.6.4.1.5, and shall process the message in accordance with the requirements for the service option; otherwise, the mobile station shall send a *Mobile Station Reject Order* ($ORDQ = '00000111'$) within T_{56m} seconds.

3. *Service Request Message*: The mobile station shall process the message as follows:

- If the purpose of the message is to reject a proposed service configuration, the mobile station shall send a *Mobile Station Reject Order* (ORDQ = '00000010') within T_{56m} seconds.
- If the purpose of the message is to propose a service configuration, the mobile station shall process the message as follows:
 - + If the mobile station accepts the proposed service configuration, the mobile station shall send a *Service Response Message* to accept the proposed service configuration within T_{59m} seconds. The mobile station shall reset the subfunction timer for T_{65m} seconds.
 - + If the mobile station does not accept the proposed service configuration and does not have an alternative service configuration to propose, the mobile station shall send a *Service Response Message* to reject the proposed service configuration within T_{59m} seconds. The mobile station shall activate the *Normal Service Subfunction*.
 - + If the mobile station does not accept the proposed service configuration and has an alternative service configuration to propose, the mobile station shall send a *Service Response Message* to propose the alternative service configuration within T_{59m} seconds. The mobile station shall activate the *Waiting for Service Request Message Subfunction*.

4. *Service Response Message*: The mobile station shall send a *Mobile Station Reject Order* (ORDQ = '00000010') within T_{56m} seconds.

5. *General Handoff Direction Message*: If the message contains a service configuration record and the mobile station accepts the service configuration specified in the message, the mobile station shall activate the *Waiting for Service Action Time Subfunction*; otherwise, the mobile station shall send a *Mobile Station Reject Order* (ORDQ = '00000111') within T_{56m} seconds and shall activate the *Normal Service Subfunction*.

- If the mobile station receives one of the following service option negotiation messages, the mobile station shall send a *Mobile Station Reject Order* (ORDQ = '00000010') within T_{56m} seconds:

1. *Service Option Request Order*
2. *Service Option Response Order*
3. *Service Option Control Order*

6.6.4.1.2.2.5 Waiting for Service Action Time Subfunction

While this subfunction is active, the mobile station waits for the action time associated with a new service configuration. If the action time was specified by a *Service Connect Message*, the mobile station shall send the *Service Connect Completion Message* at the action time.

1 While the *Wait for Service Action Time Subfunction* is active, the mobile station shall perform
2 the following:

- 3 • Prior to the action time associated with the *Service Connect Message* or *General*
4 *Handoff Direction Message* containing a service configuration record, the mobile
5 station shall process Forward and Reverse Traffic Channel frames in accordance
6 with the current service configuration. The mobile station shall discard any
7 Forward Traffic Channel frame which has a format that is not supported by the
8 mobile station. The mobile station may discard any type of Forward Traffic Channel
9 traffic that is not signaling traffic and is not part of the current service
10 configuration.
- 11 • At the action time associated with the *Service Connect Message* or *General Handoff*
12 *Direction Message* containing a service configuration record, the mobile station shall
13 begin to use the service configuration specified by the *Service Connect Message* or
14 *General Handoff Direction Message* containing a service configuration record as the
15 current service configuration and shall begin to process Forward and Reverse Traffic
16 Channel frames accordingly. If the action time was specified by a *Service Connect*
17 *Message*, the mobile station shall send a *Service Connect Completion Message* within
18 T_{56m} seconds after the action time. The mobile station shall exit this subfunction
19 and activate the *Normal Service Subfunction*.
- 20 • The mobile station shall not initiate service negotiation for a new service
21 configuration.
- 22 • For any service option connection that is part of the current or pending service
23 configuration, the mobile station may send a *Service Option Control Message* to
24 invoke a service option specific function in accordance with the requirements for the
25 associated service option.
- 26 • If $SERV_NEG_S$ changes from enabled to disabled (see 6.6.6.2.5.1), the mobile station
27 shall activate the *SO Negotiation Subfunction*.
- 28 • If the mobile station receives one of the following service negotiation messages, the
29 mobile station shall process the message according to the specified requirements:
 - 30 1. *Service Connect Message*: The mobile station shall send a *Mobile Station Reject*
31 *Order* (ORDQ = '00000010') within T_{56m} seconds.
 - 32 2. *Service Option Control Message*: If the service option connection specified by the
33 message is part of the current or pending service configuration, and the service
34 option specified by the message is the same as the service option associated with
35 the service option connection, the mobile station shall interpret the action time
36 of the message as specified in 6.6.4.1.5, and shall process the message in
37 accordance with the requirements for the service option; otherwise, the mobile
38 station shall send a *Mobile Station Reject Order* (ORDQ = '00000111') within
39 T_{56m} seconds.
 - 40 3. *Service Request Message*: The mobile station shall send a *Mobile Station Reject*
41 *Order* (ORDQ = '00000010') within T_{56m} seconds.

4. *Service Response Message*: The mobile station shall send a *Mobile Station Reject Order* (ORDQ = '00000010') within T_{56m} seconds.

5. *General Handoff Direction Message*: If the message contains a service configuration record and the mobile station accepts the service configuration specified in the message, the mobile station shall remain in this subfunction until the action time specified in the message, and shall begin to use the service configuration specified by the *General Handoff Direction Message* at the action time; otherwise, the mobile station shall send a *Mobile Station Reject Order* (ORDQ = '00000010') within T_{56m} seconds.

- If the mobile station receives one of the following service option negotiation messages, the mobile station shall send a *Mobile Station Reject Order* (ORDQ = '00000010') within T_{56m} seconds:

1. *Service Option Request Order*
2. *Service Option Response Order*
3. *Service Option Control Order*

6.6.4.1.2.2.6 SO Negotiation Subfunction

The *SO Negotiation Subfunction* is only supported for mobile stations operating in Band Class 0.

Upon activation of the *SO Negotiation Subfunction*, the mobile station shall delete from the current service configuration any service option connection which does not use primary traffic on both the Forward and Reverse Traffic Channels.

While the *SO Negotiation Subfunction* is active, the mobile station shall perform the following:

- If the current service configuration includes a service option connection, the mobile station shall process the received primary traffic bits in accordance with the requirements for the service option associated with the service option connection; otherwise, the mobile station shall discard the received primary traffic bits.
- If the current service configuration includes a service option connection, the mobile station shall transmit primary traffic bits in accordance with the requirements for the service option associated with the service option connection; otherwise, the mobile station shall transmit null Traffic Channel data.
- If the current service configuration includes a service option connection, the mobile station may send a *Service Option Control Order* to invoke a service option specific function in accordance with the requirements for the service option associated with the service option connection.
- To initiate service option negotiation, the mobile station shall set SO_REQ_s to the number of the requested service option and shall send a *Service Option Request Order* containing the requested service option number.
- If SERV_NEG_s changes from disabled to enabled (see 6.6.2.5.1), the mobile station shall set SO_REQ_s to NULL and shall activate the *Normal Service Subfunction*.

- 1 • If the mobile station receives a *Service Option Request Order*, it shall process the
2 order as follows:
 - 3 – If the mobile station accepts the requested service option, the mobile station
4 shall set SO_REQ_S to NULL and shall send a *Service Option Response Order*
5 accepting the requested service option within T_{58m} seconds. The mobile station
6 shall interpret the message action time of the *Service Option Request Order* in
7 accordance with the requirements for the requested service option and shall
8 begin using the service configuration implied by the requested service option in
9 accordance with those requirements. The implied service configuration shall
10 include the default Forward and Reverse multiplex options and transmission
11 rate sets associated with the requested service option, and shall include one
12 service option connection for which the service option connection reference is 1,
13 the service option is the requested service option, and the Forward and Reverse
14 Traffic Channel types are both primary traffic.
 - 15 – If the mobile station does not accept the requested service option and has an
16 alternative service option to request, the mobile station shall set SO_REQ_S to the
17 alternative service option number and shall send a *Service Option Request Order*
18 requesting the alternative service option within T_{58m} seconds.
 - 19 – If the mobile station does not accept the requested service option and does not
20 have an alternative service option to request, the mobile station shall set
21 SO_REQ_S to NULL and shall send a *Service Option Response Order* to reject the
22 request within T_{58m} seconds. The mobile station shall continue to use the
23 current service configuration.
- 24 • If the mobile station receives a *Service Option Response Order*, it shall process the
25 order as follows:
 - 26 – If the service option number specified in the order is equal to SO_REQ_S , the
27 mobile station shall set SO_REQ_S to NULL. The mobile station shall interpret
28 the message action time of the *Service Option Response Order* in accordance with
29 the requirements for the specified service option, and shall begin using the
30 service configuration implied by the specified service option in accordance with
31 those requirements. The implied service configuration shall include the default
32 Forward and Reverse multiplex options and transmission rate sets associated
33 with the specified service option, and shall include one service option connection
34 for which the service option connection reference is 1, the service option is the
35 specified service option, and the Forward and Reverse Traffic Channel types are
36 both primary traffic.
 - 37 – If the order indicates a service option rejection, the mobile station shall set
38 SO_REQ_S to NULL. The mobile station shall continue to use the current service
39 configuration.

1 - If the order does not indicate a service option rejection and the service option
 2 specified in the order is not equal to SO_REQ_s, the mobile station shall set
 3 SO_REQ_s to NULL and shall send a *Mobile Station Reject Order* (ORDQ =
 4 '00000100') within T_{58m} seconds. The mobile station shall continue to use the
 5 current service configuration.

6 • If the mobile station receives a *Service Option Control Order*, it shall process the
 7 order as follows:

8 - If the current service configuration includes a service option connection, the
 9 mobile station shall interpret the message action time of the *Service Option*
 10 *Control Order* in accordance with the requirements for the service option
 11 associated with the service option connection and shall process the *Service*
 12 *Option Control Order* in accordance with those requirements;

13 - otherwise, the mobile station shall send a *Mobile Station Reject Order* (ORDQ =
 14 '00000001') within T_{56m} seconds.

15 • If the mobile station receives one of the following service negotiation messages, the
 16 mobile station shall send a *Mobile Station Reject Order* (ORDQ = '00000010') within
 17 T_{56m} seconds:

- 18 1. *Service Connect Message*
- 19 2. *Service Option Control Message*
- 20 3. *Service Request Message*
- 21 4. *Service Response Message*

22 6.6.4.1.3 Acknowledgment Procedures

23 The acknowledgment procedures facilitate the reliable exchange of messages between the
 24 base station and the mobile station. The mobile station uses the fields ACK_SEQ
 25 (acknowledgment sequence number), MSG_SEQ (message sequence number) and
 26 ACK_REQ (acknowledgment required indicator) to detect duplicate messages and provide a
 27 reference for acknowledgments. These message fields are referred to as layer 2 fields, and
 28 the acknowledgment procedures are referred to as layer 2 procedures. All other message
 29 fields are referred to as layer 3 fields, and the processing of layer 3 fields is referred to as
 30 layer 3 processing. (See Annex C for further discussion of layering.)

31 On both the Forward Traffic Channel and the Reverse Traffic Channel, the procedure for
 32 messages requiring acknowledgment is a selective repeat scheme in which a message is
 33 retransmitted only if an acknowledgment for it is not received.

34 6.6.4.1.3.1 Messages Requiring Acknowledgment

35 A Traffic Channel message requires acknowledgment when the ACK_REQ field is set to '1'.

36 6.6.4.1.3.1.1 Transmitting Messages and Receiving Acknowledgments

37 The Layer 2 protocol does not guarantee delivery of messages in any order. If the mobile
 38 station requires that the base station receive a set of messages in a certain order, the

1 mobile station shall wait for an acknowledgment of each message before transmitting the
 2 next message in the set. For messages requiring acknowledgment whose relative ordering
 3 is not important, the mobile station may transmit up to four such messages before
 4 receiving an acknowledgment for the first message.

5 The mobile station shall store a message sequence number for messages requiring
 6 acknowledgment ($MSG_SEQ_ACK_s$). The mobile station shall store an acknowledgment
 7 status indicator ($ACK_WAITING_s[n]$, where n is 0 through 7) for each possible value of the
 8 Reverse Traffic Channel message MSG_SEQ field. The mobile station shall not send a new
 9 message requiring acknowledgment when $ACK_WAITING_s[(MSG_SEQ_ACK_s + 4) \bmod 8]$ is
 10 equal to YES.

11 The mobile station shall perform the following procedures:

- 12 • When the mobile station receives any message on the Forward Traffic Channel, it
 13 shall set $ACK_WAITING_s[ACK_SEQ_r]$ to NO.
- 14 • When the mobile station sends a new message requiring acknowledgment on the
 15 Reverse Traffic Channel, it shall set $ACK_WAITING_s[MSG_SEQ_ACK_s]$ to YES and
 16 shall set the MSG_SEQ field of the message to $MSG_SEQ_ACK_s$. The mobile station
 17 shall then increment $MSG_SEQ_ACK_s$, modulo 8.

18 The mobile station shall not retransmit a message for which it has received an
 19 acknowledgment.

20 If the mobile station has not received an acknowledgment within T_{1m} seconds after
 21 transmitting the message, the mobile station shall retransmit the message (see
 22 Figure 6.6.4.1.3.1.1-1). If the mobile station retransmits a message, the mobile station
 23 shall use the same MSG_SEQ number for the retransmission. The mobile station shall not
 24 retransmit a message sooner than T_{1m} seconds after the previous transmission of the same
 25 message.

26 The mobile station shall store a retransmission counter ($RETRY_COUNT_s$) for each
 27 transmitted message requiring acknowledgment. The mobile station shall set
 28 $RETRY_COUNT_s$ to zero prior to the first transmission of the message. After each
 29 transmission of the message, the mobile station shall increment $RETRY_COUNT_s$ if no
 30 acknowledgment is received. When $RETRY_COUNT_s$ is equal to N_{1m} , the mobile station
 31 shall declare an acknowledgment failure.

32

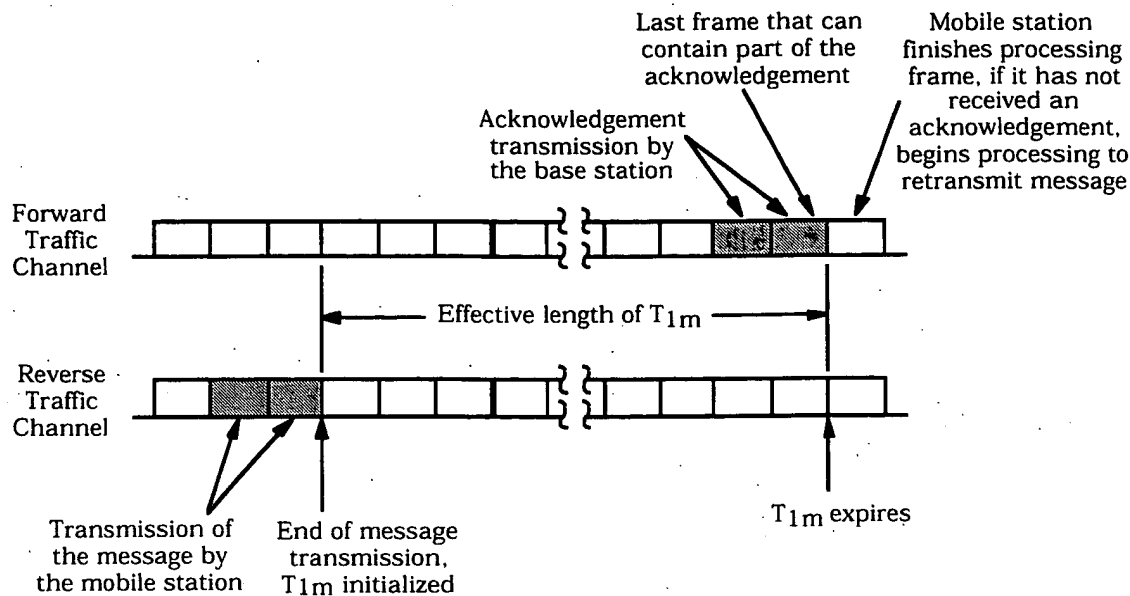


Figure 6.6.4.1.3.1.1-1. Time Limit for Acknowledgment of Reverse Traffic Channel Messages

6.6.4.1.3.1.2 Receiving Messages and Returning Acknowledgments

Messages received on the Forward Traffic Channel contain MSG_SEQ fields that are incremented using the same rules as messages transmitted on the Reverse Traffic Channel. Separate sequence numbers are maintained for *Forward Traffic Channel Messages* that require acknowledgment and for messages that do not require acknowledgment.

The mobile station acknowledges a received message by transmitting a message with the ACK_SEQ field set equal to the MSG_SEQ field of the received message. A message transmitted with the ACK_SEQ field set in this manner is referred to as including an acknowledgment of the received message.

Whenever a message requiring acknowledgment is received, the mobile station shall set the ACK_SEQ field of subsequent Reverse Traffic Channel messages to MSG_SEQ_r. If no message has been received, the mobile station shall set this field to '111'.

After receiving a message requiring acknowledgment, the mobile station shall transmit a message including an acknowledgment within T_{2m} seconds as shown in Figure 6.6.4.1.3.1.2-1.

When a received message requires acknowledgment and no message is available within T_{2m} seconds after the message is received, the mobile station shall transmit a *Mobile Station Acknowledgment Order* including the acknowledgment. The *Mobile Station Acknowledgment Order* shall be sent as a message not requiring acknowledgment.

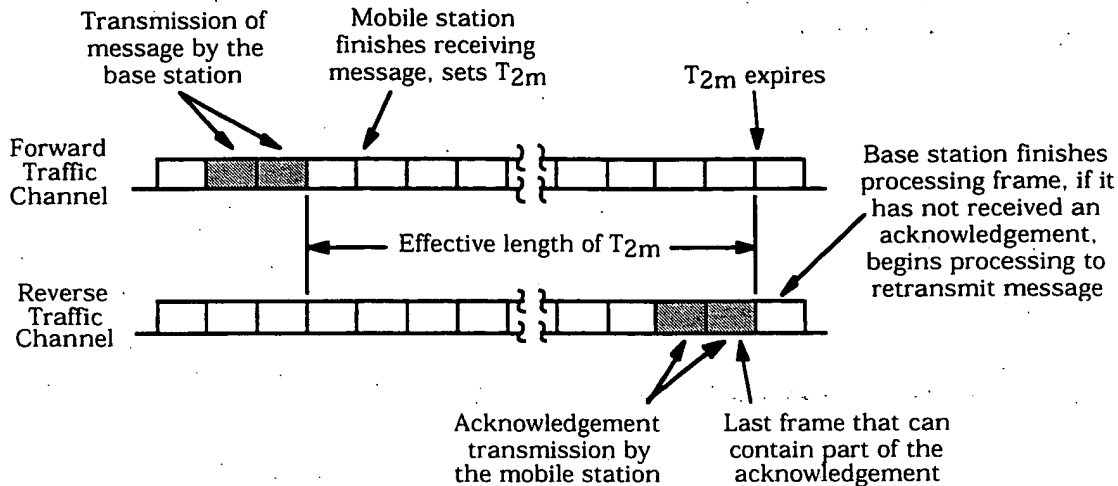


Figure 6.6.4.1.3.1.2-1. Time Limit for Acknowledgment of Forward Traffic Channel Messages

For duplicate message detection, the mobile station shall store a received status indicator for each possible value of the Forward Traffic Channel message MSG_SEQ field (MSG_SEQ_RCVD_s[n], where n is 0 through 7). The mobile station shall perform the following procedures:

- When a message requiring acknowledgment is received with message sequence number MSG_SEQ_r, and MSG_SEQ_RCVD_s[MSG_SEQ_r] is equal to NO, the mobile station shall process the message as a new message. The mobile station shall then set MSG_SEQ_RCVD_s[MSG_SEQ_r] to YES, and shall set MSG_SEQ_RCVD_s[(4 + MSG_SEQ_r) mod 8] to NO.
- When a message requiring acknowledgment is received with message sequence number MSG_SEQ_r, and MSG_SEQ_RCVD_s[MSG_SEQ_r] is equal to YES, the mobile station shall acknowledge the message but shall not perform any further processing of the message.

6.6.4.1.3.2 Messages Not Requiring Acknowledgment

A Traffic Channel message does not require acknowledgment when the ACK_REQ field is set to '0'.

The mobile station shall store a message sequence number for messages not requiring acknowledgment (MSG_SEQ_NOACK_s). For each new message sent that does not require acknowledgment, the mobile station shall set the MSG_SEQ field of the message to MSG_SEQ_NOACK_s and shall then increment MSG_SEQ_NOACK_s, modulo 8. The mobile station shall not retransmit messages not requiring acknowledgment.

The mobile station shall consider all messages received within T_{3m} seconds that do not require acknowledgment and have the same MSG_SEQ number to be duplicates, as shown

in Figure 6.6.4.1.3.2-1. If the mobile station receives multiple copies of a message as determined by the MSG_SEQ number, it shall discard the duplicate copies.

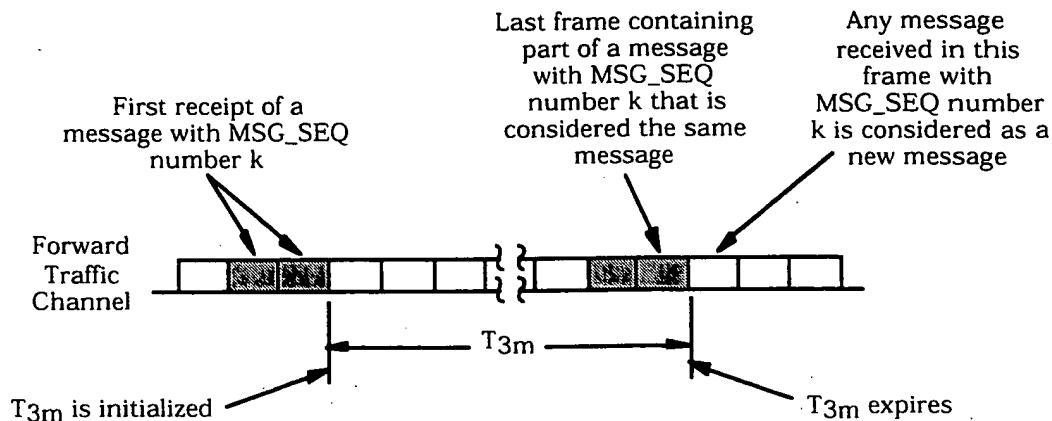


Figure 6.6.4.1.3.2-1. Time Window for Detecting Duplicate Messages Not Requiring Acknowledgment

6.6.4.1.3.3 Acknowledgment Procedures Reset

The mobile station shall reset the acknowledgment procedures as follows:

- Message sequence number reset.
 - If $ACK_WAITING_S[n]$ is equal to YES for any n , the mobile station should save the corresponding messages and retransmit them after completing the reset of the acknowledgment procedures. For each such message the mobile station shall set the retransmission counter ($RETRY_COUNT_S$) to zero.
 - The mobile station shall set both $MSG_SEQ_ACK_S$ and $MSG_SEQ_NOACK_S$ to 0, and shall set $ACK_WAITING_S[n]$ to NO for all values of n from 0 to 7.
- Acknowledgment sequence number reset. The mobile station shall set the ACK_SEQ field of all Reverse Traffic Channel messages to '111' until the first message requiring acknowledgment is received.
- Duplicate detection reset. The mobile station shall set $MSG_SEQ_RCVD_S[n]$ to NO for all values of n from 0 to 7.

6.6.4.1.4 Processing the In-Traffic System Parameters Message

The mobile station shall store the following parameters from the *In-Traffic System Parameters Message*:

- System identification ($SID_S = SID_T$)
- Network identification ($NID_S = NID_T$)

- 1 • Search window size for the Active Set and the Candidate Set
2 (SRCH_WIN_A_S = SRCH_WIN_A_T)
- 3 • Search window size for the Neighbor Set (SRCH_WIN_N_S = SRCH_WIN_N_T)
- 4 • Search window size for the Remaining Set (SRCH_WIN_R_S = SRCH_WIN_R_T)
- 5 • Pilot detection threshold (T_ADD_S = T_ADD_T)
- 6 • Pilot drop threshold (T_DROP_S = T_DROP_T)
- 7 • Active Set versus Candidate Set comparison threshold (T_COMP_S = T_COMP_T)
- 8 • Drop timer value (T_TDROP_S = T_TDROP_T)
- 9 • Maximum age for retention of Neighbor Set members
10 (NGHBR_MAX_AGE_S = NGHBR_MAX_AGE_T)
- 11 • Protocol revision level (P_REV_S = P_REV_T), and protocol revision level currently in
12 use (P_REV_IN_USE_S = min (P_REV_S, MOB_P_REV_P of the current band class))
- 13 • Slope of the handoff add/drop criterion (SOFT_SLOPE_S = SOFT_SLOPE_T)
- 14 • Intercept of the handoff add criterion (ADD_INTERCEPT_S = ADD_INTERCEPT_T)
- 15 • Intercept of the handoff drop criterion (DROP_INTERCEPT_S = DROP_INTERCEPT_T)
- 16 • If included, Reverse Supplemental Code Channel transmission offset threshold
17 (T_MULCHAN_S = T_MULCHAN_T)
- 18 • If included, Reverse Supplemental Code Channel beginning of transmission
19 preamble length (BEGIN_PREAMBLE_S = BEGIN_PREAMBLE_T)
- 20 • If included, Reverse Supplemental Code Channel discontinuous transmission
21 resumption preamble length (RESUME_PREAMBLE_S = RESUME_PREAMBLE_T)

22 If the mobile station supports packet data service options, the mobile station shall store the
23 packet data services zone identifier (PACKET_ZONE_ID_S = PACKET_ZONE_ID_T).

24 The mobile station shall determine its roaming status (see 6.6.5.3). The mobile station
25 should indicate to the user whether the mobile station is roaming.

26 6.6.4.1.5 Message Action Times

27 A Forward Traffic Channel message without a USE_TIME field or with a USE_TIME field set
28 to '0' has an implicit action time. A message whose USE_TIME field is set to '1' has an
29 explicit action time which is specified in the ACTION_TIME field of the message. A message
30 with an explicit action time is called a pending message.

31 Unless otherwise specified, a message having an implicit action time shall take effect no
32 later than the first 80 ms boundary (relative to System Time) occurring at least 80 ms after
33 the end of the frame containing the last bit of the message. A message with an explicit
34 action time shall take effect when System Time (in 80 ms units) modulo 64 becomes equal
35 to the message's ACTION_TIME field. The difference in time between ACTION_TIME and
36 the end of the frame containing the last bit of the message shall be at least 80 ms.

The mobile station shall support two pending messages at any given time, not including pending *Service Option Control Orders* or *Service Option Control Messages*. The number of pending *Service Option Control Orders* or *Service Option Control Messages* that the mobile station is required to support is specific to the service option (see the relevant service option description). In addition, the mobile station shall support one pending *Power Up Function Message*.

6.6.4.1.6 Long Code Transition Request Processing

The mobile station performs these procedures upon receiving a *Long Code Transition Request Order*.

If the *Long Code Transition Request Order* requests a transition to the private long code, and the mobile station is able to generate the private long code (see 6.3.12.3), and the mobile station accepts the request, the mobile station shall send a *Long Code Transition Response Order* (ORDQ = '00000011') within T_{56m} seconds. The mobile station shall use the private long code on both the Forward Traffic Channel and the Reverse Traffic Channel. The mobile station shall begin using the private long code using the explicit action time (see 6.6.4.1.5) specified in the message. The mobile station should indicate to the user that the voice privacy mode is active. If the *Long Code Transition Request Order* requests a private long code transition, and the mobile station is not able to generate the private long code or the mobile station does not accept the request, the mobile station shall send a *Long Code Transition Response Order* (ORDQ = '00000010') within T_{56m} seconds.

If the *Long Code Transition Request Order* requests a transition to the public long code and the mobile station accepts the request, the mobile station shall send a *Long Code Transition Response Order* (ORDQ = '00000010') within T_{56m} seconds. The mobile station shall use the public long code on both the Forward Traffic Channel and the Reverse Traffic Channel. The mobile station shall begin using the public long code using the explicit action time (see 6.6.4.1.5) specified in the message. The mobile station should indicate to the user that the voice privacy mode is inactive. If the *Long Code Transition Request Order* requests a public long code transition, and the mobile station does not accept the request, the mobile station shall send a *Long Code Transition Response Order* (ORDQ = '00000011') within T_{56m} seconds.

6.6.4.1.7 Power Up Function (PUF)

Figure 6.6.4.1.7-1 illustrates the general structure of a PUF attempt. A PUF pulse is the interval during which the mobile station transmits at the specified power level while executing the Power Up Function.

A PUF probe is one or more consecutive Traffic Channel frames. A PUF probe consists of three parts: PUF setup, PUF pulse, and PUF recovery. PUF_SETUP_SIZE is the duration of the PUF setup part, in power control groups. PUF_PULSE_SIZE is the duration of the PUF pulse, in power control groups. The PUF recovery period occupies the remainder of the last frame of the PUF probe.

A PUF attempt is a sequence of PUF probes sent by the mobile station in response to a *Power Up Function Message*. A PUF attempt begins at an offset frame boundary within 80

ms of the ACTION_TIME specified in the *Power Up Function Message*. A PUF attempt can be terminated in one of four ways:

- The mobile station receives a *Power Up Function Completion Message*.
- The mobile station has transmitted the maximum number of PUF probes specified in the *Power Up Function Message*.
- The mobile station has transmitted the maximum number of probes allowed at its maximum output power.
- The mobile station receives a new *Power Up Function Message*.

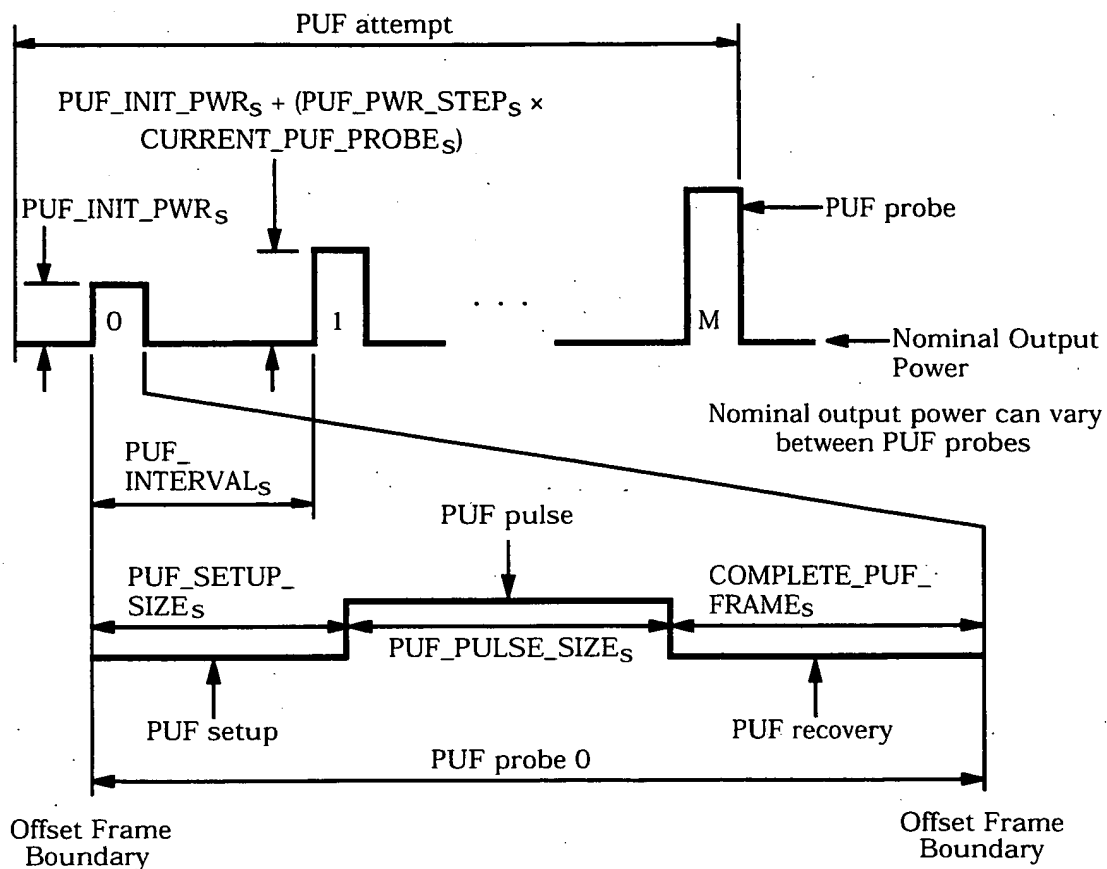


Figure 6.6.4.1.7-1. Structure of PUF Attempt

6.6.4.1.7.1 Processing the Power Up Function Message

The mobile station shall send a *Mobile Station Reject Order* with the ORDQ field set to '00000110' (message requires a capability that is not supported by the mobile station) if any of the following conditions are detected:

- 1 • PUF_FREQ_INCL_r is set to '1' and PUF_BAND_CLASS_r is not supported by the
2 mobile station.
- 3 • PUF_FREQ_INCL_r is set to '1' and the mobile station is unable to re-tune to the PUF
4 Target Frequency during (PUF_SETUP_SIZE_r + 1) power control groups.
- 5 • P_REV_IN_USE_s is less than or equal to four and the mobile station does not
6 support the Power Up Function.

7 The mobile station shall send a *Mobile Station Reject Order* with the ORDQ field set to
8 '00001100' (invalid frequency assignment), if the frequency assignment specified in the
9 message is the same as the Serving Frequency (PUF_FREQ_INCL_r is equal to '1',
10 PUF_BAND_CLASS_r is equal to CDMABAND_s and PUF_CDMA_FREQ_r is equal to
11 CDMACH_s).

12 If the mobile station is processing a PUF probe, the mobile station shall wait for the PUF
13 probe to complete. It shall then terminate the current PUF attempt. The mobile station
14 shall store the following parameters:

- 15 • Maximum number of PUF probes transmitted at full power level (MAX_PWR_PUF_s =
16 MAX_PWR_PUF_r + 1)
- 17 • Total number of PUF probes (TOTAL_PUF_PROBES_s = TOTAL_PUF_PROBES_r + 1)
- 18 • PUF interval (PUF_INTERVAL_s = PUF_INTERVAL_r)
- 19 • Number of PUF setup power control groups (PUF_SETUP_SIZE_s =
20 PUF_SETUP_SIZE_r + 1)
- 21 • Number of PUF pulse power control groups (PUF_PULSE_SIZE_s = PUF_PULSE_SIZE_r
22 + 1)
- 23 • Power increase of initial PUF pulse (PUF_INIT_PWR_s = PUF_INIT_PWR_r)
- 24 • Power increase for each successive PUF pulse (PUF_PWR_STEP_s = PUF_PWR_STEP_r)
- 25 • Frequency included indicator (PUF_FREQ_INCL_s = PUF_FREQ_INCL_r)

26 If PUF_FREQ_INCL_s equals '1', the mobile station shall store the following:

- 27 • PUF probe Target Frequency CDMA Channel number (PUF_TF_CDMACH_s =
28 PUF_CDMA_FREQ_r)
- 29 • PUF probe Target Frequency CDMA band class (PUF_TF_CDMABAND_s =
30 PUF_BAND_CLASS_r)

31 The mobile station shall set CURRENT_PUF_PROBE_s equal to 0.

32 The mobile station shall then begin the PUF attempt at the time specified in 6.6.4.1.7.2.

33 6.6.4.1.7.2 Power Up Function Procedures

34 The mobile station shall process the initial PUF probe beginning at the start of the frame
35 which starts ACTION_TIME_FRAME_r × 20 ms + FRAME_OFFSET_s × 1.25 ms after the
36 System Time specified by ACTION_TIME_r. The mobile station shall process additional PUF

1 probes beginning at intervals of PUF_INTERVAL_S frames from the beginning of the initial
2 PUF probe.

3 The mobile station shall transmit the PUF probes as described in 6.6.4.1.7.2.1 and
4 6.6.4.1.7.2.2.

5 6.6.4.1.7.2.1 PUF Probe On Serving Frequency

6 The mobile station shall process each PUF probe as follows:

- 7 • The mobile station shall use closed loop power control procedures as specified in
8 6.1.2.3.2.1.
- 9 • The mobile station shall use the gated output procedures specified in 6.1.2.2.2.2
10 and 6.1.3.1.7.3.

11 The mobile station shall control its mean output power as specified in 6.1.2.3.1.

- 12 • The mobile station shall monitor its output power during the PUF pulse, and should
13 monitor its output power at least once during each power control group of the PUF
14 pulse. If the mobile station detects that the transmit power level specified in
15 6.1.2.3.1 is equal to or greater than the maximum power output of the mobile
16 station at any time during a PUF pulse, the mobile station shall decrement
17 MAX_PWR_PUF_S by one for that PUF pulse.

- 18 • The mobile station shall transmit the traffic channel preamble for the duration of
19 the PUF probe on the Reverse Fundamental Code Channel.

20 After the processing of each PUF probe, the mobile station shall increment
21 $\text{CURRENT_PUF_PROBE}_S$ by 1. If MAX_PWR_PUF_S is equal to 0, the mobile station shall
22 terminate the PUF attempt. If $\text{CURRENT_PUF_PROBE}_S$ equal to TOTAL_PUF_PROBE_S , the
23 mobile station shall terminate the PUF attempt.

24 6.6.4.1.7.2.2 PUF Probe On PUF Target Frequency

25 The mobile station shall process each PUF probe as follows:

- 26 • The mobile station shall use closed loop power control procedures as specified in
27 6.1.2.3.2.2.
- 28 • The mobile station shall use the gated output procedures specified in 6.1.3.1.7.3.
- 29 • The mobile station shall control its mean output power as specified in 6.1.2.3.1.
- 30 • The mobile station shall store the following Serving Frequency parameters from its
31 current configuration:
 - 32 – CDMA Band Class ($\text{PUF_SF_CDMABAND}_S = \text{CDMABAND}_S$)
 - 33 – Frequency assignment ($\text{PUF_SF_CDMACH}_S = \text{CDMACH}_S$)

- 1 • The mobile station shall monitor its output power during the PUF pulse, and should
2 monitor its output power at least once during each power control group of PUF
3 pulse. If the mobile station detects that the transmit power level specified in
4 6.1.2.3.1 is equal to or greater than the maximum power output of the mobile
5 station at any time during a PUF pulse, the mobile station shall decrement the
6 MAX_PWR_PUF_s by one for that PUF pulse.
- 7 • At the beginning of the PUF probe, the mobile station shall disable its transmitter,
8 stop processing the Forward Supplemental Code Channel (if any), disable all
9 corrections to the mobile station time reference (see 6.1.5.1), tune to the CDMA
10 channel specified by PUF_TF_CDMACH_s, and PUF_TF_CDMABAND_s and re-enable
11 its transmitter.
- 12 • The mobile station shall transmit the traffic channel preamble on the Reverse
13 Fundamental Code Channel during the PUF pulse at PUF_TX_PWR_s.
- 14 • The mobile station should disable its transmitter immediately after the end of the
15 PUF pulse, and shall disable its transmitter before the end of the first power control
16 group after the PUF pulse. It shall then tune to its assigned CDMA channel as given
17 by CDMACH_s AND CDMABAND_s.
- 18 • If the interval between the time that the mobile station tunes to the PUF Target
19 Frequency and the time that it re-tunes to the Serving Frequency is equal to or
20 greater than ($N_{2m} \times 0.02$) seconds, the mobile station shall wait to receive N_{3m}
21 consecutive good frames.
- 22 • The mobile station shall then re-enable its transmitter and re-enable any
23 adjustments to the mobile station time reference.
- 24 • If Rate Set 2 is in use on the Reverse Traffic Channel, the mobile station shall set
25 the Reserved/Erase Indicator Bit as specified in 6.2.2.3.
- 26 • If the Forward Supplemental Channel assignment has not expired while the mobile
27 station has tuned to the PUF Target Frequency, then the mobile station shall
28 resume processing the Forward Supplemental Code Channels after re-tuning to the
29 Serving Frequency.
- 30 • If the Reverse Supplemental Channel assignment has not expired while the mobile
31 station has tuned to the PUF Target Frequency, then the mobile station may resume
32 transmitting the Reverse Supplemental Code Channels after re-tuning to the
33 Serving Frequency.

34 After the processing of each PUF probe, the mobile station shall increment
35 CURRENT_PUF_PROBE_s by one. If MAX_PWR_PUF_s is equal to 0, the mobile station shall
36 terminate the PUF attempt. If CURRENT_PUF_PROBE_s is equal to TOTAL_PUF_PROBE_s,
37 the mobile station shall terminate the PUF attempt.

38 6.6.4.1.7.3 Processing the Power Up Function Completion Message

39 The mobile station shall terminate any PUF attempt no later than the completion of the
40 current probe in progress and shall discard any pending *Power Up Function Message*. If
41 LOC_IND_r is equal to '1', the mobile station may store the following parameters:

- 1 • Mobile Station Latitude ($MS_LAT_S = MS_LAT_r$)
- 2 • Mobile Station Longitude ($MS_LONG_S = MS_LONG_r$)
- 3 • Time stamp ($MS_LOC_TSTAMP_S = MS_LOC_TSTAMP_r$)

4 6.6.4.2 Traffic Channel Initialization Substate

5 In this substate, the mobile station verifies that it can receive the Forward Traffic Channel
6 and begins transmitting on the Reverse Traffic Channel.

7 Upon entering the *Traffic Channel Initialization Substate*, the mobile station shall perform
8 the following:

- 9 • The mobile station shall perform registration initialization as specified in
10 6.6.5.5.4.1.
- 11 • The mobile station shall reset the acknowledgment procedures as specified in
12 6.6.4.1.3.3.
- 13 • The mobile station shall initialize Forward Traffic Channel power control as specified
14 in 6.6.4.1.1.1.
- 15 • The mobile station shall set the following variables to their initial default values
16 given below:
 - 17 - Default power control step size
18 ($PWR_CNTL_STEP_S = '000'$)
 - 19 - Default begin preamble for Reverse Supplemental Code Channels
20 ($BEGIN_PREAMBLE_S = '000'$)
 - 21 - Default resume preamble for Reverse Supplemental Code Channels
22 ($RESUME_PREAMBLE_S = '000'$)
 - 23 - Default start time for Reverse Supplemental Code Channel assignment
24 ($REV_START_TIME_S = NULL$)
 - 25 - Default *Supplemental Channel Request Message* retry delay
26 ($RETRY_DELAY_S = '00000000'$)
 - 27 - Default pilot strength reporting offset
28 ($T_MULCHAN_S = '000'$)
 - 29 - Default start time for forward Supplemental Code Channel Assignment
30 ($FOR_START_TIME_S = NULL$)
 - 31 - Default number of Reverse Supplemental Code Channels
32 ($NUM_REV_CODES_S = '000'$)
 - 33 - Default reverse use T_ADD abort indicator
34 ($USE_T_ADD_ABORT_S = '0'$)
 - 35 - Default *Supplemental Channel Request Message* sequence number
36 ($SCRM_SEQ_NUM_S = NULL$)

- 1 - Default indicator to ignore *Supplemental Channel Assignment Message*
2 (IGNORE_SCAM_S = '0')
- 3 - Default maximum wait time on the CDMA Candidate Frequency
4 (CF_WAIT_TIME_S = '1111')
- 5 - Default search period for the candidate search
6 (SEARCH_PERIOD_S = '1111')
- 7 - Default search window size for the Candidate Frequency Search Set
8 (CF_SRCH_WIN_N_S = SRCH_WIN_N_S)
- 9 - Default search window size for the Remaining Set on the CDMA Candidate
10 Frequency (CF_SRCH_WIN_R_S = SRCH_WIN_R_S)
- 11 - Default pilot PN sequence offset increment for the CDMA Candidate Frequency
12 (CF_PILOT_INC_S = PILOT_INC_S)
- 13 - Default Candidate Frequency search priorities indicator
14 (CF_SEARCH_PRIORITY_INCL_S = '0')
- 15 - Default Candidate Frequency search window size included indicator
16 (CF_SRCH_WIN_NGHR_INCL_S = '0')
- 17 - Default periodic search indicator
18 (PERIODIC_SEARCH_S = '0')
- 19 - Default return-if-handoff-fail indicator
20 (RETURN_IF_HANDOFF_FAIL_S = '0')
- 21 - Default total pilot E_c/I₀ threshold
22 (MIN_TOTAL_PILOT_EC_IO_S = '00000')
- 23 - Default total pilot E_c threshold
24 (SF_TOTAL_EC_THRESH_S = '11111')
- 25 - Default total pilot E_c/I₀ threshold
26 (SF_TOTAL_EC_IO_THRESH_S = '11111')
- 27 - Default received power difference threshold
28 (DIFF_RX_PWR_THRESH_S = '00000')
- 29 - Default maximum wait time on the CDMA Target Frequency
30 (TF_WAIT_TIME_S = '1111')
- 31 - Default Candidate Frequency Search Set
32 (Candidate Frequency Search Set is empty)
- 33 - Default Analog Frequency Search Set
34 (Analog Frequency Search Set is empty)
- 35 - Default Candidate Frequency CDMA band
36 (CF_CDMABAND_S = NULL)
- 37 - Default Candidate Frequency CDMA channel
38 (CF_CDMACH_S = NULL)

- 1 • If the ASSIGN_MODE_r field from the *Channel Assignment Message* equals '000', the
2 mobile station shall set SERV_NEG_s to disabled.
- 3 • If the ASSIGN_MODE_r field from the *Channel Assignment Message* equals '100', the
4 mobile station shall set SERV_NEG_s to enabled. For operation in Band Class 1,
5 SERV_NEG_s is always equal to enabled.
- 6 • The mobile station shall determine the service configuration as follows:
 - 7 - If SERV_NEG_s equals disabled, the initial service configuration shall include
8 Multiplex Option 1 and Rate Set 1 for both the Forward and Reverse Traffic
9 Channels, and shall include no service option connections.
 - 10 - If SERV_NEG_s equals enabled, GRANTED_MODE_s equals '00', the initial service
11 configuration shall include the multiplex option and rate set for the Forward and
12 Reverse Traffic Channels as specified by DEFAULT_CONFIG_s, and shall include
13 no service option connections.
 - 14 - If SERV_NEG_s equals enabled and GRANTED_MODE_s equals '01' or '10', the
15 initial service configuration shall include the default Forward and Reverse Traffic
16 Channel multiplex options and transmission rates corresponding to the service
17 option requested by the mobile station in the *Origination Message*, in the case of
18 a mobile station originated call, or the *Page Response Message*, in the case of a
19 mobile station terminated call, and shall include no service option connections.
 - 20 - If SERV_NEG_s equals disabled, the mobile station shall perform the following:
 - 21 + If the call is mobile station originated and the *Origination Message* requests a
22 special service option, the mobile station shall set SO_REQ_s to the special
23 service option number.
 - 24 + If the call is mobile station originated and the *Origination Message* does not
25 request a special service option, the mobile station shall set SO_REQ_s to 1
26 (the default service option number).
 - 27 + If the call is mobile station terminated, the mobile station shall set SO_REQ_s
28 to the service option number requested in the *Page Response Message*.

29 While in the *Traffic Channel Initialization Substate*, the mobile station shall perform the
30 following:

- 31 • The mobile station shall monitor Forward Traffic Channels associated with one or
32 more pilots in the Active Set.
- 33 • The mobile station shall perform pilot strength measurements as specified in
34 6.6.6.2.2, but shall not send *Pilot Strength Measurement Messages*.
- 35 • The mobile station shall perform registration timer maintenance as specified in
36 6.6.5.5.4.2.
- 37 • If the bits of TMSI_CODE_{s-p} are not all equal to '1' and if System Time (in 80 ms
38 units) exceeds TMSI_EXP_TIME_{s-p} × 2¹², the mobile station shall set all the bits of
39 TMSI_CODE_{s-p} to '1' within T_{66m} seconds.

- If the full-TMSI timer expires or has expired, the mobile station shall set all the bits of TMSI_CODE_{s-p} to '1'. The mobile station shall update the registration variables as described in 6.6.5.5.2.5.

If the mobile station does not support the assigned CDMA Channel (see 6.2.1.1) or all of the assigned Forward Traffic code channels (see 7.1.3.1.8), the mobile station shall enter the *System Determination Substate* of the *Mobile Station Initialization State* with an error indication (see 6.6.1.1).

If the mobile station supports the assigned CDMA Channel and the assigned Forward Traffic code channels, the mobile station shall perform the following:

- The mobile station shall tune to the assigned CDMA Channel.
- The mobile station shall set its code channel for the assigned Forward Traffic code channel.
- The mobile station shall set its Forward and Reverse Traffic Channel frame offsets to the assigned frame offset as determined by FRAME_OFFSET_s.
- The mobile station shall set its Forward and Reverse Traffic Channel long code masks to the public long code mask (see 6.1.3.1.8).

If the mobile station does not receive N_{5m} consecutive good frames within T_{50m} seconds after entering this substate, the mobile station shall enter the *System Determination Substate* of the *Mobile Station Initialization State* with a system lost indication (see 6.6.1.1).

If the mobile station receives N_{5m} consecutive good frames within T_{50m} seconds after entering this substate, the mobile station shall perform the following additional functions while it remains in the *Traffic Channel Initialization Substate*:

- The mobile station shall perform Forward Traffic Channel supervision as specified in 6.4.4. If a loss of the Forward Traffic Channel is declared, the mobile station shall enter the *System Determination Substate* of the *Mobile Station Initialization State* with a system lost indication (see 6.6.1.1).
- The mobile station shall adjust its transmit power as specified in 6.1.2.3.
- The mobile station shall transmit the Traffic Channel preamble as specified in 6.1.3.3.2.3.
- The mobile station shall process Forward Traffic Channel signaling traffic and shall discard other types of Forward Traffic Channel traffic.
- The mobile station shall perform the acknowledgment procedures as specified in 6.6.4.1.3. If an acknowledgment failure is declared, the mobile station shall disable its transmitter and enter the *System Determination Substate* of the *Mobile Station Initialization State* with a system lost indication (see 6.6.1.1).

When there are multiple PILOT_PN_s from the *Extended Channel Assignment Message*, the mobile station should provide diversity combining of the Forward Traffic Channel associated with all PILOT_PN_s while attempting to receive N_{5m} consecutive good frames with T_{50m} seconds after entering this substate.

1 The mobile station should provide diversity combining of the Forward Traffic Channels
 2 associated with pilots in the Active Set, if the mobile station receives multiple pilots in the
 3 *Extended Channel Assignment Message*.

4 If the mobile station does not receive a *Base Station Acknowledgment Order* within T_{51m}
 5 seconds after the first occurrence of receiving N_{5m} consecutive good frames, the mobile
 6 station shall disable its transmitter and enter the *System Determination Substate* of the
 7 *Mobile Station Initialization State* with a system lost indication (see 6.6.1.1).

8 If the mobile station receives a *Base Station Acknowledgment Order* within T_{51m} seconds
 9 after the first occurrence of receiving N_{5m} consecutive good frames, the mobile station shall
 10 perform the following:

- 11 • If $SERV_NEG_S$ equals disabled, the mobile station shall activate the *SO Negotiation*
 12 *Subfunction*.
- 13 • If $SERV_NEG_S$ equals enabled and the $GRANTED_MODE_S$ is '00' or '01', the mobile
 14 station shall activate the *Normal Service Subfunction*.
- 15 • If $SERV_NEG_S$ equals enabled and the $GRANTED_MODE_S$ is '10', the mobile station
 16 shall activate the *Waiting for Service Connect Message Subfunction*.
- 17 • If the call is mobile station terminated, and $BYPASS_ALERT_ANSWER_S$ is '1', the
 18 mobile station shall enter the *Conversation Substate*. If the call is mobile station
 19 terminated and $BYPASS_ALERT_ANSWER_S$ is '0', the mobile station shall enter the
 20 *Waiting for Order Substate*.
- 21 • If the call is mobile station originated, the mobile station shall enter the
 22 *Conversation Substate*.

23 6.6.4.3 Alerting

24 6.6.4.3.1 Waiting for Order Substate

25 In this substate, the mobile station waits for an *Alert With Information Message*.

26 Upon entering the *Waiting for Order Substate*, the mobile station shall set the substate
 27 timer for T_{52m} seconds.

28 While in the *Waiting for Order Substate*, the mobile station shall perform the following:

- 29 • If the substate timer expires, the mobile station shall disable its transmitter and
 30 enter the *System Determination Substate* of the *Mobile Station Initialization State*
 31 with a system lost indication (see 6.6.1.1).
- 32 • The mobile station shall perform Forward Traffic Channel supervision as specified in
 33 6.4.4. If a loss of the Forward Traffic Channel is declared, the mobile station shall
 34 enter the *System Determination Substate* of the *Mobile Station Initialization State*
 35 with a system lost indication (see 6.6.1.1).
- 36 • The mobile station shall adjust its transmit power as specified in 6.1.2.3.
- 37 • The mobile station shall perform Forward Traffic Channel power control as specified
 38 in 6.6.4.1.1.

- 1 • The mobile station shall perform handoff processing as specified in 6.6.6.
- 2 • The mobile station shall process Forward and Reverse Traffic Channel frames in
- 3 accordance with requirements for the active service subfunction (see 6.6.4.1.2.2).
- 4 • The mobile station shall perform registration timer maintenance as specified in
- 5 6.6.5.5.4.2.
- 6 • If the mobile station is directed by the user to transmit a message, the mobile
- 7 station shall send a *Data Burst Message*.
- 8 • If the mobile station is directed by the user to request a new service configuration,
- 9 the mobile station shall initiate service negotiation or service option negotiation in
- 10 accordance with the requirements for the active service subfunction (see
- 11 6.6.4.1.2.2).
- 12 • The mobile station may send a *Service Option Control Message* or *Service Option*
- 13 *Control Order* to invoke a service option specific function in accordance with the
- 14 requirements for the active service subfunction (see 6.6.4.1.2.2).
- 15 • If the mobile station is directed by the user to request a private long code transition
- 16 and has the long code mask (see 6.3.12.3), the mobile station shall send a *Long*
- 17 *Code Transition Request Order* (ORDQ = '00000001') as a message requiring
- 18 acknowledgment.
- 19 • If the mobile station is directed by the user to request a public long code transition,
- 20 the mobile station shall send a *Long Code Transition Request Order* (ORDQ =
- 21 '00000000') as a message requiring acknowledgment.
- 22 • If the mobile station is directed by the user to operate in analog mode, allowing
- 23 operation in either wide or narrow analog mode, the mobile station shall send the
- 24 *Request Analog Service Order* as a message requiring acknowledgment.
- 25 • If the mobile station is directed by the user to operate in wide analog mode, the
- 26 mobile station shall send the *Request Wide Analog Service Order* as a message
- 27 requiring acknowledgment.
- 28 • If the mobile station is directed by the user to operate in narrow analog mode, the
- 29 mobile station shall send the *Request Narrow Analog Service Order* as a message
- 30 requiring acknowledgment.
- 31 • If the mobile station is directed by the user to power down, the mobile station shall
- 32 enter the *Release Substate* with a power-down indication (see 6.6.4.5).
- 33 • The mobile station shall perform the acknowledgment procedures as specified in
- 34 6.6.4.1.3. If an acknowledgment failure is declared, the mobile station shall disable
- 35 its transmitter and enter the *System Determination Substate* of the *Mobile Station*
- 36 *Initialization State* with a system lost indication (see 6.6.1.1).
- 37 • If the mobile station receives a message which is included in the following list and
- 38 every message field value is within its permissible range, the mobile station shall
- 39 process the message as described below and in accordance with the message's
- 40 action time (see 6.6.4.1.5).

1. *Alert With Information Message*: If the message contains a Signal information record, the mobile station should alert the user in accordance with the Signal information record; otherwise, the mobile station should use standard alert as defined in 7.7.5.5. The mobile station shall enter the *Waiting for Mobile Station Answer Substate* (see 6.6.4.3.2).
2. *Analog Handoff Direction Message*: If the analog mode directed by the base station is supported by the mobile station, the mobile station shall process the message as specified in 6.6.6.2.9, and enter the *Waiting For Order Task* (see 2.6.4.3.1 for handoff to a wide analog channel and 2.6.5.3.1A of TIA/EIA/IS-91-A for handoff to an 800 MHz narrow analog channel). If the mobile station is directed to an unsupported operation mode or band class, the mobile station shall respond with a *Mobile Station Reject Order* with ORDQ equal to '00000110' (message requires a capability that is not supported by the mobile station).
3. *Audit Order*
4. *Authentication Challenge Message*: The mobile station shall reset the substate timer for T_{52m} seconds. The mobile station shall then process the message and respond as specified in 6.3.12.1.5 within T_{32m} seconds, regardless of the value of $AUTH_S$.
5. *Base Station Acknowledgment Order*
6. *Base Station Challenge Confirmation Order*: The mobile station shall reset the substate timer for T_{52m} seconds. The mobile station shall then process the message and respond with an *SSD Update Confirmation Order* or *SSD Update Rejection Order* as specified in 6.3.12.1.9 within T_{32m} seconds.
7. *Candidate Frequency Search Control Message*: The mobile station shall process the message as specified in 6.6.6.2.5.1.
8. *Candidate Frequency Search Request Message*: The mobile station shall process the message as specified in 6.6.6.2.5.1.
9. *Data Burst Message*
10. *Extended Handoff Direction Message*: If the band class is not specified in the message or the specified band class is supported by the mobile station, the mobile station shall process the message as specified in 6.6.6.2.5.1. The mobile station shall reset the substate timer for T_{52m} seconds.
11. *Extended Neighbor List Update Message*: The mobile station shall process the message as specified in 6.6.6.2.6.3.
12. *General Handoff Direction Message*: If the band class is not specified in the message or the specified band class is not supported by the mobile station, the mobile station shall process the message as specified in 6.6.6.2.5.1. The mobile station shall reset the substate timer for T_{52m} seconds. If the message contains a service configuration record, the mobile station shall process the message in accordance with the requirements for the active service subfunction (see 6.6.4.1.2.2).

13. *In-Traffic System Parameters Message*: The mobile station shall process the message as specified in 6.6.4.1.4.
14. *Local Control Order*
15. *Lock Until Power-Cycled Order*: The mobile station shall disable its transmitter and record the reason for the *Lock Until Power-Cycled Order* in the mobile station's semi-permanent memory (LCKRSN_{P-s-p} equals the least significant four bits of ORDQ_r). The mobile station should notify the user of the locked condition. The mobile station shall enter the *System Determination Substate* of the *Mobile Station Initialization State* with a lock indication (see 6.6.1.1), and shall not enter the *System Access State* again until after the next mobile station power-up or until it has received an *Unlock Order*. This requirement shall take precedence over any other mobile station requirement specifying entry to the *System Access State*.
16. *Long Code Transition Request Order*: The mobile station shall process the message as specified in 6.6.4.1.6.
17. *Maintenance Order*: The mobile station shall enter the *Waiting for Mobile Station Answer Substate*.
18. *Maintenance Required Order*: The mobile station shall record the reason for the *Maintenance Required Order* in the mobile station's semi-permanent memory (MAINTRSN_{S-p} equals the least significant four bits of ORDQ_r). The mobile station shall remain in the unlocked condition. The mobile station should notify the user of the maintenance required condition.
19. *Message Encryption Mode Order*: The mobile station shall process the message as specified in 6.3.12.2.
20. *Mobile Station Registered Message*: The mobile station shall process the message as specified in 6.6.5.5.4.3.
21. *Neighbor List Update Message*: The mobile station shall process the message as specified in 6.6.6.2.6.3.
22. *Parameter Update Order*: The mobile station shall reset the substate timer for T_{52m} seconds. The mobile station shall increment COUNT_{S-p} (see 2.3.12.1.3). The mobile station shall send a *Parameter Update Confirmation Order* within T_{56m} seconds. The mobile station shall set the ORDQ field of the *Parameter Update Confirmation Order* to the same value as the ORDQ field of the *Parameter Update Order*.
23. *Pilot Measurement Request Order*: The mobile station shall process the order as specified in 6.6.6.2.5.1.
24. *Power Control Message*: If PWR_CNTL_STEP_r corresponds to a power control step size (see 6.1.2.3.2) supported by the mobile station, the mobile station shall store the power control step size (PWR_CNTL_STEP_s = PWR_CNTL_STEP_r).
25. *Power Control Parameters Message*: The mobile station shall process the message as specified in 6.6.4.1.1.2.

- 1 26. *Power Up Function Message*: The mobile station shall process the message as
2 specified in 6.6.4.1.7.1.
- 3 27. *Power Up Function Completion Message*: The mobile station shall process the
4 message as specified in 6.6.4.1.7.3.
- 5 28. *Release Order*: The mobile station shall enter the *Release Substate* with a base
6 station release indication (see 6.6.4.5).
- 7 29. *Retrieve Parameters Message*: The mobile station shall send, within T_{56m}
8 seconds, a *Parameters Response Message*.
- 9 30. *Service Connect Message*: The mobile station shall process the message in
10 accordance with the requirements for the active service subfunction (see
11 6.6.4.1.2.2).
- 12 31. *Service Option Control Message*: The mobile station shall process the message in
13 accordance with the requirements for the active service subfunction (see
14 6.6.4.1.2.2).
- 15 32. *Service Option Control Order*: The mobile station shall process the message in
16 accordance with the requirements for the active service subfunction (see
17 6.6.4.1.2.2).
- 18 33. *Service Option Request Order*: The mobile station shall process the message in
19 accordance with the requirements for the active service subfunction (see
20 6.6.4.1.2.2).
- 21 34. *Service Option Response Order*: The mobile station shall process the message in
22 accordance with the requirements for the active service subfunction (see
23 6.6.4.1.2.2).
- 24 35. *Service Request Message*: The mobile station shall process the message in
25 accordance with the requirements for the active service subfunction (see
26 6.6.4.1.2.2).
- 27 36. *Service Response Message*: The mobile station shall process the message in
28 accordance with the requirements for the active service subfunction (see
29 6.6.4.1.2.2).
- 30 37. *Set Parameters Message*: If the mobile station can set all of the parameters
31 specified by the PARAMETER_ID fields in the message, the mobile station shall
32 set them; otherwise, the mobile station shall send, within T_{56m} seconds, a
33 *Mobile Station Reject Order*.
- 34 38. *SSD Update Message*: The mobile station shall reset the substate timer for T_{52m}
35 seconds. The mobile station shall then process the message and respond with a
36 *Base Station Challenge Order* as specified in 6.3.12.1.9 within T_{32m} seconds.

- 1 39. *Status Request Message*: The mobile station shall send, within T_{56m} seconds, a
2 *Status Response Message*. If the message does not specify any qualification
3 information ($QUAL_INFO_TYPE_r$ is equal to '00000000'), the mobile station shall
4 include the requested information records in the *Status Response Message*. If
5 the message specifies a band class ($QUAL_INFO_TYPE_r$ is equal to '00000001'),
6 the mobile station shall only include the requested information records for the
7 specified band class ($BAND_CLASS_r$) in the *Status Response Message*. If the
8 message specifies a band class and an operating mode ($QUAL_INFO_TYPE_r$ is
9 equal to '00000010'), the mobile station shall only include the requested
10 information records for the specified band class ($BAND_CLASS_r$) and operating
11 mode (OP_MODE_r) in the *Status Response Message*. If the message specifies a
12 band class or a band class and an operating mode which is not supported by the
13 mobile station, the mobile station shall send a *Mobile Station Reject Order* with
14 ORDQ set to '00000110' (message requires a capability that is not supported by
15 the mobile station). If the response to this message exceeds the allowable
16 length, the mobile station shall send a *Mobile Station Reject Order* with ORDQ
17 set to '00001000' (response message would exceed the allowable length). If the
18 message specifies an information record which is not supported by the mobile
19 station for the specified band class and operating mode, the mobile station shall
20 send a *Mobile Station Reject Order* with ORDQ set to '00001001' (information
21 record is not supported for the specified band class and operating mode).
- 22 40. *Status Request Order*: If $CDMABAND_s$ is equal to '00000', the mobile station
23 shall send, within T_{56m} seconds, a *Status Message*. The mobile station shall
24 respond with information corresponding to the current band class and operating
25 mode.
- 26 41. *Supplemental Channel Assignment Message*: The mobile station shall process
27 the message as specified in 6.6.6.2.5.1.
- 28 42. *TMSI Assignment Message*: The mobile station shall store the TMSI zone and
29 code as follows:
- 30 • The mobile station shall store the length of the TMSI zone field by setting
31 ASSIGNING_TMSI_ZONE_LEN_{s-p} to TMSI_ZONE_LEN_r,
 - 32 • The mobile station shall store the assigning TMSI zone number by setting
33 the ASSIGNING_TMSI_ZONE_LEN_{s-p} least significant octets of
34 ASSIGNING_TMSI_ZONE_{s-p} to TMSI_ZONE_r, and
 - 35 • The mobile station shall store the TMSI code by setting TMSI_CODE_{s-p} to
36 TMSI_CODE_r.
- 37 The mobile station shall set the TMSI expiration time by setting
38 TMSI_EXP_TIME_{s-p} to TMSI_EXP_TIME_r. The mobile station shall disable the
39 full-TMSI timer. The mobile station shall then respond with a *TMSI Assignment*
40 *Completion Message* within T_{56m} seconds.

- 1 • If the mobile station receives any other message with a MSG_TYPE specified in Table
2 7.7.3.3-1, it shall process all layer 2 fields of the message. If the mobile station
3 receives a message that is not included in the above list, cannot be processed, or
4 requires a capability which is not supported, the mobile station shall discard the
5 message and send a *Mobile Station Reject Order* (ORDQ set to the applicable reason
6 code as determined from Table 6.7.3-1) within T_{56m} seconds.
- 7 • If the bits of TMSI_CODE_{S-P} are not all equal to '1' and if System Time (in 80 ms
8 units) exceeds TMSI_EXP_TIME_{S-P} × 2¹², the mobile station shall set all the bits of
9 TMSI_CODE_{S-P} to '1' within T_{66m} seconds.
- 10 • If the full-TMSI timer expires or has expired, the mobile station shall set all the bits
11 of TMSI_CODE_{S-P} to '1'. The mobile station shall update the registration variables
12 as described in 6.6.5.5.2.5.

13 6.6.4.3.2 Waiting for Mobile Station Answer Substate

14 In this substate, the mobile station waits for the user to answer or forward the mobile
15 station terminated call.

16 Upon entering the *Waiting for Mobile Station Answer Substate*, the mobile station shall set
17 the substate timer for T_{53m} seconds.

18 While in the *Waiting for Mobile Station Answer Substate*, the mobile station shall perform
19 the following:

- 20 • If the substate timer expires, the mobile station shall disable its transmitter and
21 enter the *System Determination Substate* of the *Mobile Station Initialization State*
22 with a system lost indication (see 6.6.1.1).
- 23 • The mobile station shall perform Forward Traffic Channel supervision as specified in
24 6.4.4. If a loss of the Forward Traffic Channel is declared, the mobile station shall
25 enter the *System Determination Substate* of the *Mobile Station Initialization State*
26 with a system lost indication (see 6.6.1.1).
- 27 • The mobile station shall adjust its transmit power as specified in 6.1.2.3.
- 28 • The mobile station shall perform Forward Traffic Channel power control as specified
29 in 6.6.4.1.1.
- 30 • The mobile station shall perform handoff processing as specified in 6.6.6.
- 31 • The mobile station shall process Forward and Reverse Traffic Channel frames in
32 accordance with requirements for the active service subfunction (see 6.6.4.1.2.2).
- 33 • The mobile station shall perform registration timer maintenance as specified in
34 6.6.5.5.4.2.
- 35 • If the mobile station is directed by the user to answer the call, the mobile station
36 shall send a *Connect Order* to the base station as a message requiring
37 acknowledgment. The mobile station shall enter the *Conversation Substate*.
- 38 • If the mobile station is directed by the user to transmit a message, the mobile
39 station shall send a *Data Burst Message*.

- 1 • If the mobile station is directed by the user to request a new service configuration,
2 the mobile station shall initiate service negotiation or service option negotiation in
3 accordance with the requirements for the active service subfunction (see
4 6.6.4.1.2.2).
- 5 • If the mobile station is directed by the user to forward the incoming call, the mobile
6 station shall send a *Flash With Information Message* with a Feature Indicator
7 information record (see 6.7.4.1).
- 8 • The mobile station may send a *Service Option Control Message* or *Service Option*
9 *Control Order* to invoke a service option specific function in accordance with the
10 requirements for the active service subfunction (see 6.6.4.1.2.2).
- 11 • If the mobile station is directed by the user to request a private long code transition
12 and has the long code mask (see 6.3.12.3), the mobile station shall send a *Long*
13 *Code Transition Request Order* (ORDQ = '00000001') as a message requiring
14 acknowledgment.
- 15 • If the mobile station is directed by the user to request a public long code transition,
16 the mobile station shall send a *Long Code Transition Request Order* (ORDQ =
17 '00000000') as a message requiring acknowledgment.
- 18 • If the mobile station is directed by the user to operate in analog mode, allowing
19 operation in either wide or narrow analog mode, the mobile station shall send the
20 *Request Analog Service Order* as a message requiring acknowledgment.
- 21 • If the mobile station is directed by the user to operate in wide analog mode, the
22 mobile station shall send the *Request Wide Analog Service Order* as a message
23 requiring acknowledgment.
- 24 • If the mobile station is directed by the user to operate in narrow analog mode, the
25 mobile station shall send the *Request Narrow Analog Service Order* as a message
26 requiring acknowledgment.
- 27 • If the mobile station is directed by the user to power down, the mobile station shall
28 enter the *Release Substate* with a power-down indication (see 6.6.4.5).
- 29 • The mobile station shall perform the acknowledgment procedures as specified in
30 6.6.4.1.3. If an acknowledgment failure is declared, the mobile station shall disable
31 its transmitter and enter the *System Determination Substate* of the *Mobile Station*
32 *Initialization State* with a system lost indication (see 6.6.1.1).
- 33 • If the mobile station receives a message which is included in the following list and
34 every message field value is within its permissible range, the mobile station shall
35 process the message as described below and in accordance with the message's
36 action time (see 6.6.4.1.5).
 - 37 1. *Alert With Information Message*: The mobile station shall reset the substate
38 timer for T_{53m} seconds. If the *Alert With Information Message* does not contain a
39 Signal information record, the mobile station should use standard alert as
40 defined in 7.7.5.5.

- 1 2. *Analog Handoff Direction Message*: If the analog mode directed by the base
2 station is supported by the mobile station, the mobile station shall process the
3 message as specified in 6.6.6.2.9 and enter the Waiting For Answer Task (see
4 2.6.4.3.2 for handoff to a wide analog channel and 2.6.5.3.2A of TIA/EIA/IS-91-
5 A for handoff to an 800 MHz narrow analog channel). If the mobile station is
6 directed to an unsupported operation mode or band class, the mobile station
7 shall respond with a *Mobile Station Reject Order* with ORDQ equal to '00000110'
8 (message requires a capability that is not supported by the mobile station).
- 9 3. *Audit Order*
- 10 4. *Authentication Challenge Message*: The mobile station shall process the message
11 and respond as specified in 6.3.12.1.5 within T_{32m} seconds, regardless of the
12 value of $AUTH_S$.
- 13 5. *Base Station Acknowledgment Order*
- 14 6. *Base Station Challenge Confirmation Order*: The mobile station shall process the
15 message and respond with an *SSD Update Confirmation Order* or *SSD Update*
16 *Rejection Order* as specified in 6.3.12.1.9 within T_{32m} seconds.
- 17 7. *Candidate Frequency Search Control Message*: The mobile station shall process
18 the message as specified in 6.6.6.2.5.1.
- 19 8. *Candidate Frequency Search Request Message*: The mobile station shall process
20 the message as specified in 6.6.6.2.5.1.
- 21 9. *Data Burst Message*
- 22 10. *Extended Handoff Direction Message*: If the band class is not specified in the
23 message or the specified band is supported by the mobile station, the mobile
24 station shall process the message as specified in 6.6.6.2.5.1.
- 25 11. *Extended Neighbor List Update Message*: The mobile station shall process the
26 message as specified in 6.6.6.2.6.3.
- 27 12. *General Handoff Direction Message*: If the band class is not specified in the
28 message or the specified band is supported by the mobile station, the mobile
29 station shall process the message as specified in 6.6.6.2.5.1. If the message
30 contains a service configuration record, the mobile station shall process the
31 message in accordance with the requirements for the active service subfunction
32 (see 6.6.4.1.2.2).
- 33 13. *In-Traffic System Parameters Message*: The mobile station shall process the
34 message as specified in 6.6.4.1.4.
- 35 14. *Local Control Order*

- 1 15. *Lock Until Power-Cycled Order*: The mobile station shall disable its transmitter
2 and record the reason for the *Lock Until Power-Cycled Order* in the mobile
3 station's semi-permanent memory (LCKRSN_{P-s-p} equals the least-significant
4 four bits of ORDQ_r). The mobile station should notify the user of the locked
5 condition. The mobile station shall enter the *System Determination Substate* of
6 the *Mobile Station Initialization State* with a lock indication (see 6.6.1.1), and
7 shall not enter the *System Access State* again until after the next mobile station
8 power-up or until it has received an *Unlock Order*. This requirement shall take
9 precedence over any other mobile station requirement specifying entry to the
10 *System Access State*.
- 11 16. *Long Code Transition Request Order*: The mobile station shall process the
12 message as specified in 6.6.4.1.6.
- 13 17. *Maintenance Order*: The mobile station shall reset the substate timer for T_{53m}
14 seconds.
- 15 18. *Maintenance Required Order*: The mobile station shall record the reason for the
16 *Maintenance Required Order* in the mobile station's semi-permanent memory
17 (MAINTRSN_{s-p} equals the least-significant four bits of ORDQ_r). The mobile
18 station shall remain in the unlocked condition. The mobile station should notify
19 the user of the maintenance required condition.
- 20 19. *Message Encryption Mode Order*: The mobile station shall process the message
21 as specified in 6.3.12.2.
- 22 20. *Mobile Station Registered Message*: The mobile station shall process the
23 message as specified in 6.6.5.5.4.3.
- 24 21. *Neighbor List Update Message*: The mobile station shall process the message as
25 specified in 6.6.6.2.6.3.
- 26 22. *Parameter Update Order*: The mobile station shall increment COUNT_{s-p} (see
27 2.3.12.1.3). The mobile station shall send a *Parameter Update Confirmation*
28 *Order* within T_{56m} seconds. The mobile station shall set the ORDQ field of the
29 *Parameter Update Confirmation Order* to the same value as the ORDQ field of the
30 *Parameter Update Order*.
- 31 23. *Pilot Measurement Request Order*: The mobile station shall process the order as
32 specified in 6.6.6.2.5.1.
- 33 24. *Power Control Message*: If PWR_CNTL_STEP_r corresponds to a power control
34 step size (see 6.1.2.3.2) supported by the mobile station, the mobile station shall
35 store the power control step size (PWR_CNTL_STEP_s = PWR_CNTL_STEP_r).
- 36 25. *Power Control Parameters Message*: The mobile station shall process the
37 message as specified in 6.6.4.1.1.2.
- 38 26. *Power Up Function Message*: The mobile station shall process the message as
39 specified in 6.6.4.1.7.1.
- 40 27. *Power Up Function Completion Message*: The mobile station shall process the
41 message as specified in 6.6.4.1.7.3.

- 1 28. *Release Order*: The mobile station shall enter the *Release Substate* with a base
2 station release indication (see 6.6.4.5).
- 3 29. *Retrieve Parameters Message*: The mobile station shall send, within T_{56m}
4 seconds, a *Parameters Response Message*.
- 5 30. *Service Connect Message*: The mobile station shall process the message in
6 accordance with the requirements for the active service subfunction (see
7 6.6.4.1.2.2).
- 8 31. *Service Option Control Message*: The mobile station shall process the message in
9 accordance with the requirements for the active service subfunction (see
10 6.6.4.1.2.2).
- 11 32. *Service Option Control Order*: The mobile station shall process the message in
12 accordance with the requirements for the active service subfunction (see
13 6.6.4.1.2.2).
- 14 33. *Service Option Request Order*: The mobile station shall process the message in
15 accordance with the requirements for the active service subfunction (see
16 6.6.4.1.2.2).
- 17 34. *Service Option Response Order*: The mobile station shall process the message in
18 accordance with the requirements for the active service subfunction (see
19 6.6.4.1.2.2).
- 20 35. *Service Request Message*: The mobile station shall process the message in
21 accordance with the requirements for the active service subfunction (see
22 6.6.4.1.2.2).
- 23 36. *Service Response Message*: The mobile station shall process the message in
24 accordance with the requirements for the active service subfunction (see
25 6.6.4.1.2.2).
- 26 37. *Set Parameters Message*: If the mobile station can set all of the parameters
27 specified by the PARAMETER_ID fields in the message, the mobile station shall
28 set them; otherwise, the mobile station shall send, within T_{56m} seconds, a
29 *Mobile Station Reject Order*.
- 30 38. *SSD Update Message*: The mobile station shall process the message and
31 respond with a *Base Station Challenge Order* as specified in 6.3.12.1.9 within
32 T_{32m} seconds.

39. *Status Request Message*: The mobile station shall send, within T_{56m} seconds, a *Status Response Message*. If the message does not specify any qualification information ($QUAL_INFO_TYPE_r$ is equal to '00000000'), the mobile station shall include the requested information records in the *Status Response Message*. If the message specifies a band class ($QUAL_INFO_TYPE_r$ is equal to '00000001'), the mobile station shall only include the requested information records for the specified band class ($BAND_CLASS_r$) in the *Status Response Message*. If the message specifies a band class and an operating mode ($QUAL_INFO_TYPE_r$ is equal to '00000010'), the mobile station shall only include the requested information records for the specified band class ($BAND_CLASS_r$) and operating mode (OP_MODE_r) in the *Status Response Message*. If the message specifies a band class or a band class and an operating mode which is not supported by the mobile station, the mobile station shall send a *Mobile Station Reject Order* with $ORDQ$ set to '00000110' (message requires a capability that is not supported by the mobile station). If the response to this message exceeds the allowable length, the mobile station shall send a *Mobile Station Reject Order* with $ORDQ$ set to '00001000' (response message would exceed the allowable length). If the message specifies an information record which is not supported by the mobile station for the specified band class and operating mode, the mobile station shall send a *Mobile Station Reject Order* with $ORDQ$ set to '00001001' (information record is not supported for the specified band class and operating mode).

40. *Status Request Order*: If $CDMABAND_s$ is equal to '00000', the mobile station shall send, within T_{56m} seconds, a *Status Message*. The mobile station shall respond with information corresponding to the current band class and operating mode.

41. *Supplemental Channel Assignment Message*: The mobile station shall process the message as specified in 6.6.6.2.5.1.

42. *TMSI Assignment Message*: The mobile station shall store the TMSI zone and code as follows:

- The mobile station shall store the length of the TMSI zone field by setting $ASSIGNING_TMSI_ZONE_LEN_{s-p}$ to $TMSI_ZONE_LEN_r$,
- The mobile station shall store the assigning TMSI zone number by setting the $ASSIGNING_TMSI_ZONE_LEN_{s-p}$ least significant octets of $ASSIGNING_TMSI_ZONE_{s-p}$ to $TMSI_ZONE_r$, and
- The mobile station shall store the TMSI code by setting $TMSI_CODE_{s-p}$ to $TMSI_CODE_r$.

The mobile station shall set the TMSI expiration time by setting $TMSI_EXP_TIME_{s-p}$ to $TMSI_EXP_TIME_r$. The mobile station shall disable the full-TMSI timer. The mobile station shall then respond with a *TMSI Assignment Completion Message* within T_{56m} seconds.

- 1 • If the mobile station receives any other message with a MSG_TYPE specified in
2 Table 7.7.3.3-1, it shall process all layer 2 fields of the message. If the mobile
3 station receives a message that is not included in the above list, cannot be
4 processed, or requires a capability which is not supported, the mobile station shall
5 discard the message and send a *Mobile Station Reject Order* (ORDQ set to the
6 applicable reason code as determined from Table 6.7.3-1) within T_{56m} seconds.
- 7 • If the bits of TMSI_CODE_{S-P} are not all equal to '1' and if System Time (in 80 ms
8 units) exceeds TMSI_EXP_TIME_{S-P} × 2¹², the mobile station shall set all the bits of
9 TMSI_CODE_{S-P} to '1' within T_{66m} seconds.
- 10 • If the full-TMSI timer expires or has expired, the mobile station shall set all the bits
11 of TMSI_CODE_{S-P} to '1'. The mobile station shall update the registration variables
12 as described in 6.6.5.5.2.5.

13 6.6.4.4 Conversation Substate

14 In this substate, the mobile station exchanges Traffic Channel frames with the base station
15 in accordance with the current service configuration.

16 Upon entering the *Conversation Substate*, the mobile station shall perform the following:

- 17 • If SERV_NEG_S equals enabled, the call is mobile station originated, and
18 GRANTED_MODE_S is equal to '00' or '01', the mobile station should initiate service
19 negotiation to request a service configuration in accordance with the requirements
20 for the active service subfunction (see 6.6.4.1.2.2).

21 While in the *Conversation Substate*, the mobile station shall perform the following:

- 22 • The mobile station shall perform Forward Traffic Channel supervision as specified in
23 6.4.4. If a loss of the Forward Fundamental Code Channel is declared, the mobile
24 station shall enter the *System Determination Substate* of the *Mobile Station*
25 *Initialization State* with a system lost indication (see 6.6.1.1).
- 26 • The mobile station shall adjust its transmit power as specified in 6.1.2.3.
- 27 • The mobile station shall perform Forward Traffic Channel power control as specified
28 in 6.6.4.1.1.
- 29 • The mobile station shall perform handoff processing as specified in 6.6.6.
- 30 • The mobile station shall process Forward and Reverse Traffic Channel frames in
31 accordance with requirements for the active service subfunction (see 6.6.4.1.2.2).
- 32 • The mobile station shall perform registration timer maintenance as specified in
33 6.6.5.5.4.2.
- 34 • The mobile station shall send an *Origination Continuation Message* as a message
35 requiring acknowledgment within T_{54m} seconds after entering the *Conversation*
36 *Substate* if any of the following conditions occur:
 - 37 - The mobile station originated the call and did not send all the dialed digits in the
38 *Origination Message*.
 - 39 - There is more than one calling party number associated with the mobile station.

- 1 – A calling party subaddress is used in the call.
- 2 – A called party subaddress is used in the call.

3 If more than one calling party number is associated with the mobile station, the
 4 mobile station shall include the calling party number being used in the calling party
 5 number information record in the *Origination Continuation Message*. If only one
 6 calling party number is associated with the mobile station, the mobile station shall
 7 not include the calling party number information record in the *Origination*
 8 *Continuation Message*. If a calling party subaddress is used, the mobile station
 9 shall include the calling party subaddress information record in the *Origination*
 10 *Continuation Message*; otherwise, the mobile station shall omit the calling party
 11 subaddress information record. If a called party subaddress is used, the mobile
 12 station shall include the called party subaddress information record in the
 13 *Origination Continuation Message*; otherwise, the mobile station shall omit the
 14 calling party subaddress information record.

- 15 • If the mobile station is directed by the user to transmit a message, the mobile
 16 station shall send a *Data Burst Message*.
- 17 • If the mobile station is directed by the user to request a new service configuration,
 18 the mobile station shall initiate service negotiation or service option negotiation in
 19 accordance with the requirements for the active service subfunction (see
 20 6.6.4.1.2.2).
- 21 • The mobile station may send a *Service Option Control Message* or *Service Option*
 22 *Control Order* to invoke a service option specific function in accordance with the
 23 requirements for the active service subfunction (see 6.6.4.1.2.2).
- 24 • If the mobile station is directed by the user to request a private long code transition
 25 and has the long code mask (see 6.3.12.3), the mobile station shall send a *Long*
 26 *Code Transition Request Order* (ORDQ = '00000001') as a message requiring
 27 acknowledgment.
- 28 • If the mobile station is directed by the user to request a public long code transition,
 29 the mobile station shall send a *Long Code Transition Request Order* (ORDQ =
 30 '00000000') as a message requiring acknowledgment.
- 31 • If the mobile station is directed by the user to issue a flash, the mobile station shall
 32 build a *Flash With Information Message* with the collected digits or characters
 33 contained in a *Keypad Facility* information record, if needed, and shall send the
 34 message to the base station as a message requiring acknowledgment.
- 35 • If the mobile station is directed by the user to send burst DTMF digits, the mobile
 36 station shall build the *Send Burst DTMF Message* with the dialed digits and shall
 37 send the message as a message requiring acknowledgment. The mobile station
 38 sending multiple *Send Burst DTMF Messages* shall preserve relative ordering of
 39 these messages (see 6.6.4.1.3.1.1). The mobile station should attempt to preserve
 40 the user timing as much as possible, using recommended values of
 41 DTMF_ON_LENGTH (see Table 6.7.2.3.2.7-1) and DTMF_OFF_LENGTH (see Table
 42 6.7.2.3.2.7-2).

- 1 • If the mobile station is directed by the user to send a continuous DTMF digit, the
2 mobile station shall build the *Continuous DTMF Tone Order* with the dialed digit and
3 shall send the order as a message requiring acknowledgment. When the mobile
4 station is directed by the user to cease sending the continuous DTMF digit, the
5 mobile station shall send the *Continuous DTMF Tone Order* (ORDQ = '1111111') as
6 a message requiring acknowledgment. The mobile station sending multiple
7 *Continuous DTMF Tone Orders* shall preserve relative ordering of these messages (see
8 6.6.4.1.3.1.1). The mobile station shall send the *Continuous DTMF Tone Order* with
9 the ORDQ set to '1111111' indicating the completion of the current continuous
10 DTMF digit before sending the *Continuous DTMF Tone Order* for another digit or the
11 *Send Burst DTMF Message*.
- 12 • If the mobile station is directed by the user to operate in analog mode, allowing
13 operation in either wide or narrow analog mode, the mobile station shall send the
14 *Request Analog Service Order* as a message requiring acknowledgment.
- 15 • If the mobile station is directed by the user to operate in wide analog mode, the
16 mobile station shall send the *Request Wide Analog Service Order* as a message
17 requiring acknowledgment.
- 18 • If the mobile station is directed by the user to operate in narrow analog mode, the
19 mobile station shall send the *Request Narrow Analog Service Order* as a message
20 requiring acknowledgment.
- 21 • If the mobile station is directed by the user to disconnect the call, the mobile station
22 shall enter the *Release Substate* with a mobile station release indication (see
23 6.6.4.5).
- 24 • If the mobile station is directed by the user to power down, the mobile station shall
25 enter the *Release Substate* with a power-down indication (see 6.6.4.5).
- 26 • The mobile station shall perform the acknowledgment procedures as specified in
27 6.6.4.1.3. If an acknowledgment failure is declared, the mobile station shall disable
28 its transmitter and shall enter the *System Determination Substate* of the *Mobile*
29 *Station Initialization State* with a system lost indication (see 6.6.1.1).
- 30 • The mobile station may send a *Supplemental Channel Request Message* in
31 accordance with requirements for the currently connected service option.
- 32 • If the mobile station receives a message which is included in the following list and
33 every message field value is within its permissible range, the mobile station shall
34 process the message as described below and in accordance with the message's
35 action time (see 6.6.4.1.5).
 - 36 1. *Alert With Information Message*: If the message contains a Signal information
37 record with the SIGNAL_TYPE field set to '01' or '10', or if the message does not
38 contain a Signal information record, the mobile station shall enter the *Waiting*
39 *For Mobile Station Answer Substate*. The mobile station should alert the user in
40 accordance with the Signal information record. If the *Alert With Information*
41 *Message* does not contain a Signal information record, the mobile station should
42 use standard alert as defined in 7.7.5.5.

- 1 2. *Analog Handoff Direction Message*: If the analog mode directed by the base
2 station is supported by the mobile station, the mobile station shall process the
3 message as specified in 6.6.6.2.9 and shall enter the Conversation Task (see
4 2.6.4.4 for handoff to a wide analog channel and 2.6.5.4A of TIA/EIA/IS-91-A
5 for handoff to an 800 MHz narrow analog channel). If the mobile station is
6 directed to an unsupported operation mode or band class, the mobile station
7 shall respond with a *Mobile Station Reject Order* with ORDQ equal to '00000110'
8 (message requires a capability that is not supported by the mobile station).
- 9 3. *Audit Order*
- 10 4. *Authentication Challenge Message*: The mobile station shall process the message
11 and shall respond as specified in 6.3.12.1.5 within T_{32m} seconds, regardless of
12 the value of $AUTH_S$.
- 13 5. *Base Station Acknowledgment Order*
- 14 6. *Base Station Challenge Confirmation Order*: The mobile station shall process the
15 message and shall respond with an *SSD Update Confirmation Order* or *SSD*
16 *Update Rejection Order* as specified in 6.3.12.1.9 within T_{32m} seconds.
- 17 7. *Candidate Frequency Search Control Message*: The mobile station shall process
18 the message as specified in 6.6.6.2.5.1.
- 19 8. *Candidate Frequency Search Request Message*: The mobile station shall process
20 the message as specified in 6.6.6.2.5.1.
- 21 9. *Continuous DTMF Tone Order*: Support of this order by the mobile station is
22 optional.
- 23 10. *Data Burst Message*
- 24 11. *Extended Handoff Direction Message*: If the band class is not specified in the
25 message, or if the specified band class is supported by the mobile station, the
26 mobile station shall process the message as specified in 6.6.6.2.5.1.
- 27 12. *Extended Neighbor List Update Message*: The mobile station shall process the
28 message as specified in 6.6.6.2.6.3.
- 29 13. *Flash With Information Message*
- 30 14. *General Handoff Direction Message*: If the band class is not specified in the
31 message or the specified band is supported by the mobile station, the mobile
32 station shall process the message as specified in 6.6.6.2.5.1. If the message
33 contains a service configuration record, the mobile station shall process the
34 message in accordance with the requirements for the active service subfunction
35 (see 6.6.4.1.2.2).
- 36 15. *In-Traffic System Parameters Message*: The mobile station shall process the
37 message as specified in 6.6.4.1.4.
- 38 16. *Local Control Order*

- 1 17. *Lock Until Power-Cycled Order*: The mobile station shall disable its transmitter
2 and record the reason for the *Lock Until Power-Cycled Order* in the mobile
3 station's semi-permanent memory (LCKRSN_{P-s-p} equals the least-significant
4 four bits of ORDQ_r). The mobile station should notify the user of the locked
5 condition. The mobile station shall enter the *System Determination Substate* of
6 the *Mobile Station Initialization State* with a lock indication (see 6.6.1.1), and
7 shall not enter the *System Access State* again until after the next mobile station
8 power-up or until it has received an *Unlock Order*. This requirement shall take
9 precedence over any other mobile station requirement specifying entry to the
10 *System Access State*.
- 11 18. *Long Code Transition Request Order*: The mobile station shall process the
12 message as specified in 6.6.4.1.6.
- 13 19. *Maintenance Order*: The mobile station shall enter the *Waiting for Mobile Station*
14 *Answer Substate*.
- 15 20. *Maintenance Required Order*: The mobile station shall record the reason for the
16 *Maintenance Required Order* in the mobile station's semi-permanent memory
17 (MAINTRSN_{S-p} equals the least-significant four bits of ORDQ_r). The mobile
18 station shall remain in the unlocked condition. The mobile station should notify
19 the user of the maintenance required condition.
- 20 21. *Message Encryption Mode Order*: The mobile station shall process the message
21 as specified in 6.3.12.2.
- 22 22. *Mobile Station Registered Message*: The mobile station shall process the
23 message as specified in 6.6.5.5.4.3.
- 24 23. *Neighbor List Update Message*: The mobile station shall process the message as
25 specified in 6.6.6.2.6.3.
- 26 24. *Parameter Update Order*: The mobile station shall increment COUNT_{S-p} (see
27 2.3.12.1.3). The mobile station shall send a *Parameter Update Confirmation*
28 *Order* within T_{56m} seconds. The mobile station shall set the ORDQ field of the
29 *Parameter Update Confirmation Order* to the same value as the ORDQ field of the
30 *Parameter Update Order*.
- 31 25. *Pilot Measurement Request Order*: The mobile station shall process the order as
32 specified in 6.6.6.2.5.1.
- 33 26. *Power Control Message*: If PWR_CNTL_STEP_r corresponds to a power control
34 step size (see 6.1.2.3.2) supported by the mobile station, the mobile station shall
35 store the power control step size (PWR_CNTL_STEP_s = PWR_CNTL_STEP_r).
- 36 27. *Power Control Parameters Message*: The mobile station shall process the
37 message as specified in 6.6.4.1.1.2.
- 38 28. *Power Up Function Message*: The mobile station shall process the message as
39 specified in 6.6.4.1.7.1.
- 40 29. *Power Up Function Completion Message*: The mobile station shall process the
41 message as specified in 6.6.4.1.7.3.

- 1 30. *Release Order*: The mobile station shall enter the *Release Substate* with a base
2 station release indication (see 6.6.4.5).
- 3 31. *Retrieve Parameters Message*: The mobile station shall send, within T_{56m}
4 seconds, a *Parameters Response Message*.
- 5 32. *Send Burst DTMF Message*: Support of this order by the mobile station is
6 optional.
- 7 33. *Service Connect Message*: The mobile station shall process the message in
8 accordance with the requirements for the active service subfunction (see
9 6.6.4.1.2.2).
- 10 34. *Service Option Control Message*: The mobile station shall process the message in
11 accordance with the requirements for the active service subfunction (see
12 6.6.4.1.2.2).
- 13 35. *Service Option Control Order*: The mobile station shall process the message in
14 accordance with the requirements for the active service subfunction (see
15 6.6.4.1.2.2).
- 16 36. *Service Option Request Order*: The mobile station shall process the message in
17 accordance with the requirements for the active service subfunction (see
18 6.6.4.1.2.2).
- 19 37. *Service Option Response Order*: The mobile station shall process the message in
20 accordance with the requirements for the active service subfunction (see
21 6.6.4.1.2.2).
- 22 38. *Service Redirection Message*: The mobile station shall process the message as
23 follows:
- 24 If $RECORD_TYPE_r$ is equal to '00000000', the mobile station shall do the
25 following:
- 26 - The mobile station shall set $RETURN_IF_FAIL_s = RETURN_IF_FAIL_r$.
- 27 - If $DELETE_TMSI_r$ is equal to '1', the mobile station shall set all the bits of
28 $TMSI_CODE_{s-p}$ to '1'.
- 29 - The mobile station shall disable the full-TMSI timer.
- 30 - The mobile station shall enter the Release Substate with an NDSS off
31 indication (see 6.6.1.1).
- 32 If $RECORD_TYPE_r$ is not equal to '00000000', $REDIRECT_TYPE_r$ is '1', and the
33 mobile station supports the band class and operating mode specified in the
34 message, the mobile station shall do the following:
- 35 - The mobile station shall store the redirection record received in the message
36 as $REDIRECT_REC_s$.
- 37 - The mobile station shall enable $NDSS_ORGS_s$ and shall record the dialed
38 digits.
- 39 - The mobile station shall set $RETURN_IF_FAIL_s = RETURN_IF_FAIL_r$.

1 – If DELETE_TMSI_r is equal to '1', the mobile station shall set all the bits of
2 TMSI_CODE_{s-p} to '1'.

3 – The mobile station shall disable the full-TMSI timer.

4 – The mobile station shall enter the *System Determination Substate of the*
5 *Mobile Station Initialization State* with a redirection indication (see 6.6.1.1).

6 Otherwise, the mobile station shall discard the message and send a *Mobile*
7 *Station Reject Order* (ORDQ set to the applicable reason code as determined from
8 Table 6.7.3-1) within T_{56m} seconds.

9 39. *Service Request Message*: The mobile station shall process the message in
10 accordance with the requirements for the active service subfunction (see
11 6.6.4.1.2.2).

12 40. *Service Response Message*: The mobile station shall process the message in
13 accordance with the requirements for the active service subfunction (see
14 6.6.4.1.2.2).

15 41. *Set Parameters Message*: If the mobile station can set all of the parameters
16 specified by the PARAMETER_ID fields in the message, the mobile station shall
17 set them; otherwise, the mobile station shall send, within T_{56m} seconds, a
18 *Mobile Station Reject Order*.

19 42. *SSD Update Message*: The mobile station shall process the message and
20 respond with a *Base Station Challenge Order* as specified in 6.3.12.1.9 within
21 T_{32m} seconds.

22 43. *Status Request Message*: The mobile station shall send, within T_{56m} seconds, a
23 *Status Response Message*. If the message does not specify any qualification
24 information (QUAL_INFO_TYPE_r is equal to '00000000'), the mobile station shall
25 include the requested information records in the *Status Response Message*. If
26 the message specifies a band class (QUAL_INFO_TYPE_r is equal to '00000001'),
27 the mobile station shall only include the requested information records for the
28 specified band class (BAND_CLASS_r) in the *Status Response Message*. If the
29 message specifies a band class and an operating mode (QUAL_INFO_TYPE_r is
30 equal to '00000010'), the mobile station shall only include the requested
31 information records for the specified band class (BAND_CLASS_r) and operating
32 mode (OP_MODE_r) in the *Status Response Message*.

33 If the message specifies a band class or a band class and an operating mode
34 which is not supported by the mobile station, the mobile station shall send a
35 *Mobile Station Reject Order* with ORDQ set to '00000110' (message requires a
36 capability that is not supported by the mobile station).

37 If the response to this message exceeds the allowable length, the mobile station
38 shall send a *Mobile Station Reject Order* with ORDQ set to '00001000' (response
39 message would exceed the allowable length).

If the message specifies an information record which is not supported by the mobile station for the specified band class and operating mode, the mobile station shall send a *Mobile Station Reject Order* with ORDQ set to '00001001' (information record is not supported for the specified band class and operating mode).

44. *Status Request Order*: If CDMABAND_s is equal to '00000', the mobile station shall send a *Status Message* within T_{56m} seconds. The mobile station shall respond with information corresponding to the current band class and operating mode.

45. *Supplemental Channel Assignment Message*: The mobile station shall process the message as specified in 6.6.6.2.5.1.

46. *TMSI Assignment Message*: The mobile station shall store the TMSI zone and code as follows:

- The mobile station shall store the length of the TMSI zone field by setting ASSIGNING_TMSI_ZONE_LEN_{s-p} to TMSI_ZONE_LEN_r.
- The mobile station shall store the assigning TMSI zone number by setting the ASSIGNING_TMSI_ZONE_LEN_{s-p} least significant octets of ASSIGNING_TMSI_ZONE_{s-p} to TMSI_ZONE_r, and
- The mobile station shall store the TMSI code by setting TMSI_CODE_{s-p} to TMSI_CODE_r.

The mobile station shall set the TMSI expiration time by setting TMSI_EXP_TIME_{s-p} to TMSI_EXP_TIME_r. The mobile station shall disable the full-TMSI timer. The mobile station shall then respond with a *TMSI Assignment Completion Message* within T_{56m} seconds.

If the bits of TMSI_CODE_{s-p} are not all equal to '1', and if System Time (in 80 ms units) exceeds TMSI_EXP_TIME_{s-p} × 2¹², the mobile station shall set all the bits of TMSI_CODE_{s-p} to '1' within T_{66m} seconds.

If the full-TMSI timer expires or has expired, the mobile station shall set all the bits of TMSI_CODE_{s-p} to '1'. The mobile station shall update the registration variables as described in 6.6.5.5.2.5.

- If the mobile station receives any other message with a MSG_TYPE specified in Table 7.7.3.3-1, it shall process all layer 2 fields of the message. If the mobile station receives a message that is not included in the above list, cannot be processed, or requires a capability which is not supported, the mobile station shall discard the message and send a *Mobile Station Reject Order* (ORDQ set to the applicable reason code as determined from Table 6.7.3-1) within T_{56m} seconds.

6.6.4.5 Release Substate

In this substate, the mobile station confirms the call disconnect.

Upon entering the *Release Substate*, the mobile station shall perform the following:

- The mobile station shall set the substate timer for T_{55m} seconds.

- 1 • If the mobile station enters the *Release Substate* with a power-down indication, the
2 mobile station shall send a *Release Order* (ORDQ = '00000001'), and shall perform
3 power-down registration procedures (see 6.6.5.5.4.4).
- 4 • If the mobile station enters the *Release Substate* with a mobile station release
5 indication, the mobile station shall send a *Release Order* (ORDQ = '00000000'), and
6 set RETURN_CAUSE_s to '0000'.
- 7 • If the mobile station enters the *Release Substate* with a base station release
8 indication, the mobile station shall send a *Release Order* (ORDQ = '00000000'). The
9 mobile station shall disable its transmitter, set RETURN_CAUSE_s to '0000', and
10 shall enter the *System Determination Substate* of the *Mobile Station Initialization*
11 *State* with a release indication (see 6.6.1.1).
- 12 • If the mobile station enters the *Release Substate* with a redirection indication, the
13 mobile station shall send a *Release Order* (ORDQ = '00000000') and shall enter the
14 *System Determination Substate* of the *Mobile Station Initialization State* with a
15 redirection indication (see 6.6.1.1).
- 16 • If the mobile station enters the *Release Substate* with an NDSS off indication, the
17 mobile station shall send a *Release Order* (ORDQ = '00000000'), and shall enter the
18 *System Determination Substate* of the *Mobile Station Initialization State* with an
19 NDSS off indication (see 6.6.1.1).

20 While in the *Release Substate*, the mobile station shall perform the following:

- 21 • If the substate timer expires, the mobile station shall disable its transmitter and
22 shall enter the *System Determination Substate* of the *Mobile Station Initialization*
23 *State* with a release indication (see 6.6.1.1).
- 24 • The mobile station shall perform Forward Traffic Channel supervision as specified in
25 6.4.4. If a loss of the Forward Traffic Channel is declared, the mobile station shall
26 enter the *System Determination Substate* of the *Mobile Station Initialization State*
27 with a release indication (see 6.6.1.1).
- 28 • The mobile station shall adjust its transmit power as specified in 6.1.2.3.
- 29 • The mobile station shall perform Forward Traffic Channel power control as specified
30 in 6.6.4.1.1.
- 31 • The mobile station shall perform handoff processing as specified in 6.6.6.
- 32 • The mobile station shall transmit null Traffic Channel data on the Reverse Traffic
33 Channel (see 6.1.3.3), except when transmitting signaling traffic.
- 34 • The mobile station shall process Forward Traffic Channel signaling traffic and shall
35 discard other types of Forward Traffic Channel traffic.
- 36 • The mobile station shall perform registration timer maintenance as specified in
37 6.6.5.5.4.2.

- 1 • The mobile station shall perform the acknowledgment procedures as specified in
2 6.6.4.1.3. If an acknowledgment failure is declared, the mobile station shall disable
3 its transmitter and enter the *System Determination Substate* of the *Mobile Station*
4 *Initialization State* with a release indication (see 6.6.1.1).
- 5 • If the mobile station receives a message which is included in the following list, and if
6 every message field value is within its permissible range, the mobile station shall
7 process the message as described below and in accordance with the message's
8 action time (see 6.6.4.1.5):
 - 9 1. *Alert With Information Message*: The mobile station shall enter the *Waiting for*
10 *Mobile Station Answer Substate*. If the *Alert With Information Message* does not
11 contain a Signal information record, the mobile station should use standard
12 alert as defined in 7.7.5.5.
 - 13 2. *Base Station Acknowledgment Order*
 - 14 3. *Candidate Frequency Search Control Message*: The mobile station shall process
15 the message as specified in 6.6.6.2.5.1.
 - 16 4. *Candidate Frequency Search Request Message*: The mobile station shall process
17 the message as specified in 6.6.6.2.5.1.
 - 18 5. *Data Burst Message*
 - 19 6. *Extended Handoff Direction Message*: The mobile station shall process the
20 message as specified in 6.6.6.2.5.1.
 - 21 7. *Extended Neighbor List Update Message*: The mobile station shall process the
22 message as specified in 6.6.6.2.6.3.
 - 23 8. *General Handoff Direction Message*: The mobile station shall process the
24 message as specified in 6.6.6.2.5.1. If the message contains a service
25 configuration record, the mobile station shall process the message in accordance
26 with the requirements for the active service subfunction (see 6.6.4.1.2.2).
 - 27 9. *In-Traffic System Parameters Message*: The mobile station shall process the
28 message as specified in 6.6.4.1.4.
 - 29 10. *Local Control Order*
 - 30 11. *Lock Until Power-Cycled Order*: The mobile station shall disable its transmitter
31 and record the reason for the *Lock Until Power-Cycled Order* in the mobile
32 station's semi-permanent memory (LCKRSN_P_{s-p} equals the least-significant
33 four bits of ORDQ_r). The mobile station should notify the user of the locked
34 condition. The mobile station shall enter the *System Determination Substate* of
35 the *Mobile Station Initialization State* with a lock indication (see 6.6.1.1), and
36 shall not enter the *System Access State* again until after the next mobile station
37 power-up or until it has received an *Unlock Order*. This requirement shall take
38 precedence over any other mobile station requirement specifying entry to the
39 *System Access State*.

12. *Maintenance Required Order*: The mobile station shall record the reason for the *Maintenance Required Order* in the mobile station's semi-permanent memory (MAINTRSN_{S-P} equals the least-significant four bits of ORDQ_T). The mobile station shall remain in the unlocked condition. The mobile station should notify the user of the maintenance required condition.
13. *Mobile Station Registered Message*: The mobile station shall process the message as specified in 6.6.5.5.4.3.
14. *Neighbor List Update Message*: The mobile station shall process the message as specified in 6.6.6.2.6.3.
15. *Power Control Message*: If PWR_CNTL_STEP_T corresponds to a power control step size (see 6.1.2.3.2) supported by the mobile station, the mobile station shall store the power control step size ($\text{PWR_CNTL_STEP}_S = \text{PWR_CNTL_STEP}_T$).
16. *Power Control Parameters Message*: The mobile station shall process the message as specified in 6.6.4.1.1.2.
17. *Power Up Function Message*: The mobile station shall process the message as specified in 6.6.4.1.7.1.
18. *Power Up Function Completion Message*: The mobile station shall process the message as specified in 6.6.4.1.7.3.
19. *Release Order*: The mobile station shall disable its transmitter. If the mobile station enters the *Release Substate* with a power-down indication, the mobile station may power down; otherwise, the mobile station shall enter the *System Determination Substate* of the *Mobile Station Initialization State* with a release indication (see 6.6.1.1).
20. *Retrieve Parameters Message*: The mobile station shall send, within T_{56m} seconds, a *Parameters Response Message*.
21. *Service Option Control Message*: The mobile station shall process the message in accordance with the requirements for the active service subfunction (see 6.6.4.1.2.2).
22. *Service Option Control Order*: The mobile station shall process the message in accordance with the requirements for the active service subfunction (see 6.6.4.1.2.2).
23. *Service Redirection Message*: The mobile station shall disable its transmitter. If the mobile station enters the *Release Substate* with a power-down indication, the mobile station may power down; otherwise, the mobile station shall process the message as follows:
 - If RECORD_TYPE_T is '00000000', the mobile station shall do the following:
 - The mobile station shall set $\text{RETURN_IF_FAIL}_S = \text{RETURN_IF_FAIL}_T$.
 - If DELETE_TMSI_T is equal to '1', the mobile station shall set all the bits of TMSI_CODE_{S-P} to '1'.
 - The mobile station shall disable the full-TMSI timer.

- 1 - The mobile station shall enter the *Release Substate* with an NDSS off
- 2 indication (see 6.6.1.1).
- 3 • If RECORD_TYPE is not equal to '00000000', REDIRECT_TYPE_r is '1', and
- 4 the mobile station supports the band class and operating mode specified in
- 5 the message, the mobile station shall do the following:
- 6 - The mobile station shall store the redirection record received in the
- 7 message as REDIRECT_REC_s.
- 8 - The mobile station shall set RETURN_IF_FAIL_s = RETURN_IF_FAIL_r.
- 9 - If DELETE_TMSI_r is equal to '1', the mobile station shall set all the bits of
- 10 TMSI_CODE_{s-p} to '1'.
- 11 - The mobile station shall disable the full-TMSI timer.
- 12 - The mobile station shall enter the *System Determination Substate of the*
- 13 *Mobile Station Initialization State* with a redirection indication (see
- 14 6.6.1.1).
- 15 • Otherwise, the mobile station shall discard the message and send a *Mobile*
- 16 *Station Reject Order* (ORDQ set to the applicable reason code as determined
- 17 from Table 6.7.3-1) within T_{56m} seconds.
- 18 24. *Status Request Message*: The mobile station shall send, within T_{56m} seconds, a
- 19 *Status Response Message*. If the message does not specify any qualification
- 20 information (QUAL_INFO_TYPE_r is equal to '00000000'), the mobile station shall
- 21 include the requested information records in the *Status Response Message*. If
- 22 the message specifies a band class (QUAL_INFO_TYPE_r is equal to '00000001'),
- 23 the mobile station shall only include the requested information records for the
- 24 specified band class (BAND_CLASS_r) in the *Status Response Message*. If the
- 25 message specifies a band class and an operating mode (QUAL_INFO_TYPE_r is
- 26 equal to '00000010'), the mobile station shall only include the requested
- 27 information records for the specified band class (BAND_CLASS_r) and operating
- 28 mode (OP_MODE_r) in the *Status Response Message*. If the message specifies a
- 29 band class or a band class and an operating mode which are not supported by
- 30 the mobile station, the mobile station shall send a *Mobile Station Reject Order*
- 31 with ORDQ set to '00000110' (message requires a capability that is not
- 32 supported by the mobile station). If the response to this message exceeds the
- 33 allowable length, the mobile station shall send a *Mobile Station Reject Order* with
- 34 ORDQ set to '00001000' (response message would exceed the allowable length).
- 35 If the message specifies an information record which is not supported by the
- 36 mobile station for the specified band class and operating mode, the mobile
- 37 station shall send a *Mobile Station Reject Order* with ORDQ set to '00001001'
- 38 (information record is not supported for the specified band class and operating
- 39 mode).
- 40 25. *Status Request Order*: The mobile station shall send, a *Status Message* within
- 41 T_{56m} seconds. The mobile station shall respond with information corresponding
- 42 to the current band class and operating mode.

26. *Supplemental Channel Assignment Message*: The mobile station shall process the message as specified in 6.6.6.2.5.1.

27. *TMSI Assignment Message*: The mobile station shall store the TMSI zone and code as follows:

- The mobile station shall store the length of the TMSI zone field by setting ASSIGNING_TMSI_ZONE_LEN_{s-p} to TMSI_ZONE_LEN_r;
- The mobile station shall store the assigning TMSI zone number by setting the ASSIGNING_TMSI_ZONE_LEN_{s-p} least significant octets of ASSIGNING_TMSI_ZONE_{s-p} to TMSI_ZONE_r, and
- The mobile station shall store the TMSI code by setting TMSI_CODE_{s-p} to TMSI_CODE_r.

The mobile station shall set the TMSI expiration time by setting TMSI_EXP_TIME_{s-p} to TMSI_EXP_TIME_r. The mobile station shall disable the full-TMSI timer. The mobile station shall then respond with a *TMSI Assignment Completion Message* within T_{56m} seconds.

If the bits of TMSI_CODE_{s-p} are not all equal to '1', and if System Time (in 80 ms units) exceeds TMSI_EXP_TIME_{s-p} × 2¹², the mobile station shall set all the bits of TMSI_CODE_{s-p} to '1' within T_{66m} seconds.

If the full-TMSI timer expires or has expired, the mobile station shall set all the bits of TMSI_CODE_{s-p} to '1'. The mobile station shall update the registration variables as described in 6.6.5.5.2.5.

- If the mobile station receives any other message with a MSG_TYPE specified in Table 7.7.3.3-1, it shall process all layer 2 fields of the message. If the mobile station receives a message that is not included in the above list or cannot be processed, the mobile station shall discard the message and send a *Mobile Station Reject Order* (ORDQ set to the applicable reason code as determined from Table 6.7.3-1) within T_{56m} seconds.

6.6.5 Registration

6.6.5.1 Forms of Registration

Registration is the process by which the mobile station notifies the base station of its location, status, identification, slot cycle, and other characteristics. The mobile station informs the base station of its location and status so that the base station can efficiently page the mobile station when establishing a mobile station terminated call. For operation in the slotted mode, the mobile station supplies the SLOT_CYCLE_INDEX parameter so that the base station can determine which slots the mobile station is monitoring. The mobile station supplies the station class mark and the protocol revision number so that the base station knows the capabilities of the mobile station.

The CDMA system supports nine different forms of registration:

1. Power-up registration. The mobile station registers when it powers on, switches from using a different PCS frequency block, switches from using a different band

1 class, switches from using an alternative operating mode, or switches from using
2 the analog system.

- 3 2. Power-down registration. The mobile station registers when it powers off if
4 previously registered in the current serving system.
- 5 3. Timer-based registration. The mobile station registers when a timer expires.
- 6 4. Distance-based registration. The mobile station registers when the distance
7 between the current base station and the base station in which it last registered
8 exceeds a threshold.
- 9 5. Zone-based registration. The mobile station registers when it enters a new zone.
- 10 6. Parameter-change registration. The mobile station registers when certain of its
11 stored parameters change or when it enters a new system.
- 12 7. Ordered registration. The mobile station registers when the base station requests it.
- 13 8. Implicit registration. When a mobile station successfully sends an *Origination*
14 *Message* or *Page Response Message*, the base station can infer the mobile station's
15 location. This is considered an implicit registration.
- 16 9. Traffic Channel registration. Whenever the base station has registration
17 information for a mobile station that has been assigned to a Traffic Channel, the
18 base station can notify the mobile station that it is registered.

19 The first five forms of registration, as a group, are called autonomous registration and are
20 enabled by roaming status (see 6.6.5.3). Parameter-change registration is independent of
21 roaming status. Ordered registration is initiated by the base station through an *Order*
22 *Message*. Implicit registration does not involve the exchange of any registration messages
23 between the base station and the mobile station. The base station can obtain registration
24 information by sending the *Status Request Message* to the mobile station on either the
25 Paging Channel or the Forward Traffic Channel. The base station can obtain limited
26 registration information by sending the *Status Request Order* to the mobile station on the
27 Forward Traffic Channel. The mobile station can be notified that it is registered through
28 the *Mobile Station Registered Message*.

29 Any of the various forms of autonomous registration and parameter-change registration can
30 be enabled or disabled. The forms of registration that are enabled and the corresponding
31 registration parameters are communicated in the *System Parameters Message*.

32 In addition, the mobile station may enable or disable autonomous registration for each type
33 of roaming described in 6.6.5.3.

34 6.6.5.1.1 Power-Up Registration

35 Power-up registration is performed when the mobile station is turned on. To prevent
36 multiple registrations when power is quickly turned on and off, the mobile station delays
37 T_{57m} seconds before registering, after entering the *Mobile Station Idle State*.

38 The mobile station shall maintain a power-up/initialization timer. While the power-
39 up/initialization timer is active, the mobile station shall not make registration access
40 attempts.

6.6.5.1.2 Power-Down Registration

Power-down registration is performed when the user directs the mobile station to power off. If power-down registration is performed, the mobile station does not power off until after completing the registration attempt.

The mobile station does not perform power-down registration if it has not previously registered in the system that corresponds to the current SID_s and NID_s (see 6.6.5.5.2.4).

6.6.5.1.3 Timer-Based Registration

Timer-based registration causes the mobile station to register at regular intervals. Its use also allows the system to automatically deregister mobile stations that did not perform a successful power-down registration. Timer-based registration uses a Paging Channel slot counter (equivalent to a timer with time increments of 80 ms). Timer-based registration is performed when the counter reaches a maximum value (REG_COUNT_MAX_s) that is controlled by the base station via the REG_PRD field of the *System Parameters Message*. The base station disables timer-based registration by setting REG_PRD to zero.

The mobile station shall maintain a timer-based registration counter (REG_COUNT_s). The mobile station shall compute and store the timer expiration count (REG_COUNT_MAX_s) as

$$\text{REG_COUNT_MAX}_s = \lfloor 2^{\text{REG_PRD}/4} \rfloor$$

The mobile station shall maintain an indicator of timer-based registration timer enable status (COUNTER_ENABLED_s).

The counter is reset when the mobile station powers on and when the mobile station switches from different band classes, different serving systems, different PCS frequency blocks, and alternate operating modes. The counter is also reset after each successful registration.

Whenever the mobile station changes COUNTER_ENABLED_s from NO to YES, it shall set REG_COUNT_s to a pseudorandom value between 0 and REG_COUNT_MAX_s - 1, using the pseudorandom number generator specified in 6.6.7.2.

If the mobile station is operating in the non-slotted mode, it shall increment the timer-based registration counter once per 80 ms whenever COUNTER_ENABLED_s equals YES. If the mobile station is operating in slotted mode, it may increment the timer-based registration counter when it begins to monitor the Paging Channel (see 6.6.2.1.1.3). A mobile station operating in the slotted mode shall increment the counter by the same amount that the counter would have been incremented if the mobile station had been operating in the non-slotted mode.⁷

6.6.5.1.4 Distance-Based Registration

Distance-based registration causes a mobile station to register when the distance between the current base station and the base station in which it last registered exceeds a

⁷ For example, if the mobile station uses a 2.56 second slot cycle, then it may increment the counter by 32 every time it becomes active.

threshold. The mobile station determines that it has moved a certain distance by computing a distance measure based on the difference in latitude and longitude between the current base station and the base station where the mobile station last registered. If this distance measure exceeds the threshold value, the mobile station registers.

The mobile station stores the base station latitude ($BASE_LAT_REG_{s-p}$), the base station longitude ($BASE_LONG_REG_{s-p}$) and the registration distance ($REG_DIST_REG_{s-p}$), of the base station whose Access Channel was used for the mobile station's last registration (see 6.3.4). The mobile station shall compute the current base station's distance from the last registration point (DISTANCE) as:

$$DISTANCE = \left\lfloor \frac{\sqrt{(\Delta lat)^2 + (\Delta long)^2}}{16} \right\rfloor,$$

where

$$\Delta lat = BASE_LAT_s - BASE_LAT_REG_{s-p}$$

and

$$\Delta long = (BASE_LONG_s - BASE_LONG_REG_{s-p}) \times \cos(\pi/180 \times BASE_LAT_REG_{s-p}/14400).$$

The mobile station shall compute DISTANCE with an error of no more than $\pm 5\%$ of its true value when $|BASE_LAT_REG_{s-p}/14400|$ is less than 60 and with an error of no more than $\pm 7\%$ of its true value when $|BASE_LAT_REG_{s-p}/14400|$ is between 60 and 70.⁸

6.6.5.1.5 Zone-Based Registration

Registration zones are groups of base stations within a given system and network. A base station's zone assignment is identified by the REG_ZONE field of the *System Parameters Message*.

Zone-based registration causes a mobile station to register whenever it moves into a new zone, not on its internally stored list of visited registration zones. A zone is added to the list whenever a registration (including implicit registration) occurs, and is deleted upon expiration of a timer. After a system access, timers are enabled for every zone except one that was successfully registered by the access.

A mobile station can be registered in more than one zone. Zones are uniquely identified by a zone number (REG_ZONE) plus the SID and NID of the zone.

The mobile station shall store a list of the zones in which the mobile station has registered ($ZONE_LIST_s$). Each entry in $ZONE_LIST_s$ shall include the zone number (REG_ZONE) and the (SID, NID) pair for the zone. The mobile station shall be capable of storing at least N_{9m} entries in $ZONE_LIST_s$. A base station shall be considered to be in $ZONE_LIST_s$ only if the base station's REG_ZONE, SID and NID are found in an entry in $ZONE_LIST_s$. The mobile station provides storage for one entry of $ZONE_LIST_s$ in semi-permanent memory, $ZONE_LIST_{s-p}$ (see 6.3.4).

⁸ BASE_LAT and BASE_LONG are given in units of 1/4 seconds. BASE_LAT/14400 and BASE_LONG/14400 are in units of degrees.

1 The mobile station shall maintain a zone list entry timer for each entry in ZONE_LIST_s.
 2 When an entry in ZONE_LIST_s is removed from the list, the corresponding zone list entry
 3 timer shall be disabled. The timer duration shall be as determined from the stored value of
 4 ZONE_TIMER_s using Table 7.7.2.3.2.1-1. The mobile station shall provide a means to
 5 examine each timer's value while the timer is active, so that the age of list entries can be
 6 compared.

7 If the mobile station supports Band Class 1, the mobile station shall maintain an identifier
 8 of the PCS frequency block for each entry in ZONE_LIST_s (see 6.1.1.1). When the mobile
 9 station adds a zone to ZONE_LIST_s, the mobile station shall include the identifier for the
 10 PCS frequency block.⁹

11 If the mobile station supports multiple band classes, the mobile station shall maintain an
 12 identifier of the band class for each entry in ZONE_LIST_s (see 6.1.1.1). When the mobile
 13 station adds a zone to ZONE_LIST_s, the mobile station shall include the identifier for the
 14 band class.

15 The base station controls the maximum number of zones in which a mobile station may be
 16 considered registered, by means of the TOTAL_ZONES field of the *System Parameters*
 17 *Message*. When an entry is added to the zone list, or if TOTAL_ZONES is decreased, the
 18 mobile station removes entries from the zone list if there are more entries than allowed by
 19 the setting of TOTAL_ZONES.

20 Whenever ZONE_LIST_s contains more than TOTAL_ZONES_s entries, the mobile station
 21 shall delete the excess entries according to the following rules:

- 22 • If TOTAL_ZONES_s is equal to zero, the mobile station shall delete all entries.
- 23 • If TOTAL_ZONES_s is not equal to zero, the mobile station shall delete those entries
 24 having active zone list entry timers, starting with the oldest entry, as determined by
 25 the timer values, and continuing in order of decreasing age until no more than
 26 TOTAL_ZONES_s entries remain.

27 The mobile station shall store a list of the systems/networks in which the mobile station
 28 has registered (SID_NID_LIST_s). Each entry in SID_NID_LIST_s shall include the (SID, NID)
 29 pair for the system/network. The mobile station shall be capable of storing N_{10m} entries in
 30 SID_NID_LIST_s. A base station shall be considered to be in the SID_NID_LIST_s only if the
 31 base station's SID and NID are found in an entry in SID_NID_LIST_s. The mobile station
 32 shall provide storage for one entry of SID_NID_LIST_s in semi-permanent memory
 33 (SID_NID_LIST_{s-p}).

34 If the mobile station supports Band Class 1, the mobile station shall maintain an identifier
 35 of the PCS frequency block for each entry in SID_NID_LIST_s (see 6.1.1.1). When the mobile
 36 station adds an entry to SID_NID_LIST_s, the mobile station shall include the identifier for
 37 the PCS frequency block.

⁹ The mobile station need not maintain a separate identifier for Band Class 0, as the least significant bit of the SID identifies the serving system.

1 If the mobile station supports multiple band classes, the mobile station shall maintain an
 2 identifier of the band class for each entry in $SID_NID_LIST_S$ (see 6.1.1.1). When the mobile
 3 station adds an entry to $SID_NID_LIST_S$, the mobile station shall include the identifier for
 4 the band class.

5 The mobile station shall maintain a SID/NID list entry timer for each entry in
 6 $SID_NID_LIST_S$. When an entry in $SID_NID_LIST_S$ is removed from the list, the
 7 corresponding SID/NID list entry timer shall be disabled. The timer duration shall be as
 8 determined from the stored value of $ZONE_TIMER_S$ using Table 7.7.2.3.2.1-1. The mobile
 9 station shall provide a means to examine each timer's value while the timer is active, so
 10 that the age of list entries can be compared.

11 Whenever $SID_NID_LIST_S$ contains more than N_{10m} entries, the mobile station shall delete
 12 the excess entries according to the following rule:

- 13 • The mobile station shall delete those entries having active SID/NID list entry timers,
 14 starting with the oldest entry, as determined by the timer values, and continuing in
 15 order of decreasing age.

16 Whenever $MULT_SIDS_S$ is equal to '0' and SID_NID_LIST contains entries with different
 17 SIDs, the mobile station shall delete the excess entries according to the following rules:

- 18 • If the SID/NID entry timer for any entry is disabled, the mobile station shall delete
 19 all entries not having the same SID as the entry whose timer is disabled;
- 20 • Otherwise, the mobile station shall delete all entries not having the same SID as the
 21 newest entry in SID_NID_LIST , as determined by the timer values.

22 Whenever $MULT_NIDS_S$ is equal to '0', and SID_NID_LIST contains more than one entry for
 23 any SID, the mobile station shall delete the excess entries for each SID according to the
 24 following rules:

- 25 • If the SID/NID entry timer for any entry is disabled, the mobile station shall delete
 26 all entries for that SID except the entry whose timer is disabled;
- 27 • For all other SIDs, the mobile station shall delete all entries for each SID except the
 28 newest entry, as determined by the timer values.

29 6.6.5.1.6 Parameter-Change Registration

30 Parameter-change registration is performed when a mobile station modifies any of the
 31 following stored parameters:

- 32 • The preferred slot cycle index ($SLOT_CYCLE_INDEX_p$)
- 33 • The station class mark (SCM_p)
- 34 • The call termination enabled indicators ($MOB_TERM_HOME_p$,
 35 $MOB_TERM_FOR_SID_p$, and $MOB_TERM_FOR_NID_p$)

36 Parameter-change registration is also performed when any of the following capabilities
 37 supported by the mobile station changes:

- 38 • The band classes

- The power classes
- The rate sets
- The operating modes

Parameter-change registration is performed whenever there is no entry in the mobile station's $SID_NID_LIST_S$ that matches the base station's SID and NID.

Parameter-change registration is independent of the roaming status of the mobile station.¹⁰

Whenever a parameter changes, the mobile station shall delete all entries from $SID_NID_LIST_S$.

6.6.5.1.7 Ordered Registration

The base station can command the mobile station to register by sending a *Registration Request Order*. Ordered registration is performed in the *Mobile Station Order and Message Processing Operation* (6.6.2.4). Requirements are specified in 6.6.5.5.2.3.

6.6.5.1.8 Implicit Registration

Whenever an *Origination Message* or *Page Response Message* is sent, the base station can infer the location of the mobile station. This is considered an implicit registration. Requirements are specified in 6.6.5.5.3.

6.6.5.1.9 Traffic Channel Registration

While a mobile station is assigned a Traffic Channel, the mobile station is notified that it is registered through the *Mobile Station Registered Message*. Requirements are specified in 6.6.5.5.4.3.

6.6.5.2 Systems and Networks

A base station is a member of a cellular or PCS system and a network. A network is a subset of a system.

Systems are labeled with an identification called the system identification or SID; networks within a system are given a network identification or NID. A network is uniquely identified by the pair (SID, NID). The SID number 0 is a reserved value. The NID number 0 is a reserved value indicating all base stations that are not included in a specific network. The NID number 65535 ($2^{16}-1$) is a reserved value the mobile station may use for roaming status determination (see 6.6.5.3) to indicate that the mobile station considers the entire SID (regardless of NID) as home (non-roaming).

Figure 6.6.5.2-1 shows an example of systems and networks. SID i contains three networks labeled t , u , and v . A base station in system i that is not in one of these three networks is in NID 0.

¹⁰ The indicator REG_ENABLED does not govern parameter-change registration.

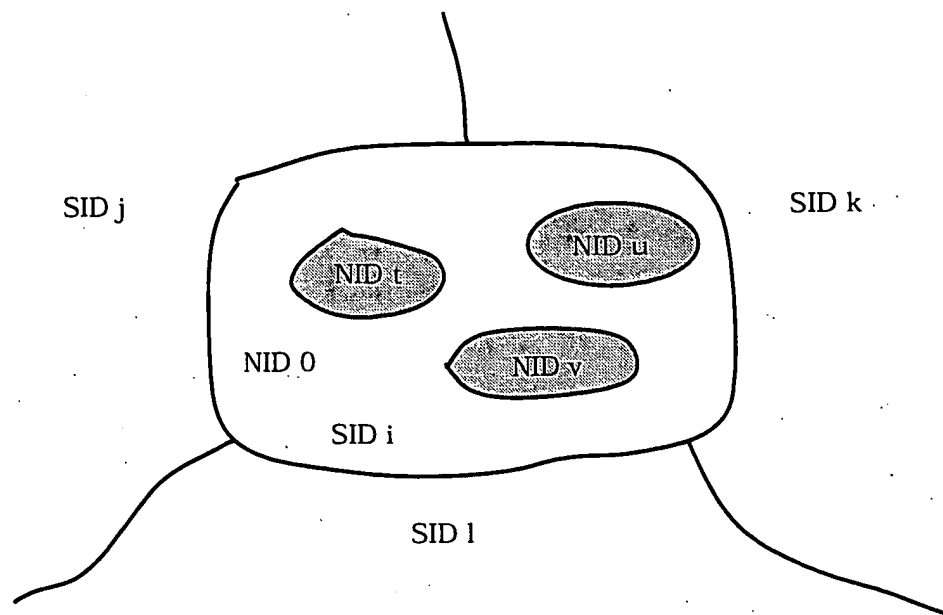


Figure 6.6.5.2-1. Systems and Networks Example

6.6.5.3 Roaming

The mobile station has a list of one or more home (non-roaming) (SID, NID) pairs. A mobile station is roaming if the stored (SID_s, NID_s) pair (received in the *System Parameters Message*) does not match one of the mobile station's non-roaming (SID, NID) pairs. Two types of roaming are defined: A mobile station is a foreign NID roamer if the mobile station is roaming and there is some (SID, NID) pair in the mobile station's (SID, NID) list for which SID is equal to SID_s. A mobile station is a foreign SID roamer if there is no (SID, NID) pair in the mobile station's (SID, NID) list for which SID is equal to SID_s¹¹. The mobile station may use the special NID value 65535 to indicate that the mobile station considers all NIDs within a SID to be non-roaming (i.e., that the mobile station is not roaming when operating with any base station in that system).

The mobile station shall store three 1-bit parameters in its permanent memory (see 6.3.8). These parameters are MOB_TERM_HOME_p, MOB_TERM_FOR_SID_p, and MOB_TERM_FOR_NID_p. The mobile station shall set MOB_TERM_HOME_p to '1' if the mobile station is configured to receive mobile station terminated calls when using a home (SID, NID) pair; otherwise MOB_TERM_HOME_p shall be set to '0'. The mobile station shall set MOB_TERM_FOR_SID_p to '1' if the mobile station is configured to receive mobile station terminated

¹¹ For example, suppose a mobile station has the following SID, NID list: (2, 3), (2, 0), (3, 1). If the base station (SID, NID) pair is (2, 3), then the mobile station is not roaming because the (SID, NID) pair is in the list. If the base station (SID, NID) pair is (2, 7), then the mobile station is a foreign NID roamer, because the SID 2 is in the list, but the (SID, NID) pair (2, 7) is not in the list. If the base station (SID, NID) pair is (4, 0), then the mobile station is a foreign SID roamer, because SID 4 is not in the list.

calls when it is a foreign SID roamer; otherwise MOB_TERM_FOR_SID_p shall be set to '0'.
 The mobile station shall set MOB_TERM_FOR_NID_p to '1' if the mobile station is configured
 to receive mobile station terminated calls when it is a foreign NID roamer; otherwise
 MOB_TERM_FOR_NID_p shall be set to '0'.

The mobile station determines the registration status using these parameters and the
 HOME_REG, FOR_NID_REG, and FOR_SID_REG fields of the *System Parameters Message*.

The mobile station shall store a mobile station call termination enabled indicator,
 MOB_TERM_s. The mobile station shall set MOB_TERM_s to YES if any of the following
 conditions is met:

- The mobile station is not roaming, and MOB_TERM_HOME_p is equal to '1'; or
- The mobile station is a foreign NID roamer and MOB_TERM_FOR_NID_p is equal to
 '1'; or
- The mobile station is a foreign SID roamer and MOB_TERM_FOR_SID_p is equal to
 '1'; otherwise the mobile station shall set MOB_TERM_s to NO.

The mobile station shall store a registration status indicator, REG_ENABLED_s. The
 indicator REG_ENABLED_s shall be set to YES if any of the following conditions is met for
 the mobile station:

- The mobile station is not roaming, and both HOME_REG_s and MOB_TERM_HOME_p
 are equal to '1'; or
- The mobile station is a foreign NID roamer and both FOR_NID_REG_s and
 MOB_TERM_FOR_NID_p are equal to '1'; or
- The mobile station is a foreign SID roamer and both FOR_SID_REG_s and
 MOB_TERM_FOR_SID_p are equal to '1'; otherwise the mobile station shall set
 REG_ENABLED_s to NO.

The mobile station performs autonomous registrations if REG_ENABLED_s is YES.

6.6.5.4 Registration Timers and Indicators

The mobile station shall provide the following registration timers:

- Power-up/initialization timer (see 6.6.5.1.1).
- Timer-based registration timer (see 6.6.5.1.3).
- Zone list entry timers (see 6.6.5.1.5).
- SID/NID list entry timers (see 6.6.5.1.5).

The mobile station shall provide a means of enabling and disabling each timer. When a
 timer is disabled, it shall not be considered expired. A timer that has been enabled is
 referred to as active.

6.6.5.5 Registration Procedures

6.6.5.5.1 Actions in the Mobile Station Initialization State

6.6.5.5.1.1 Power-Up or Change to a Different Operating Mode, Band Class, Serving System, or PCS Frequency Block

Upon power-up, the mobile station shall perform the following actions:

- Delete all entries of ZONE_LIST_S.
- If ZONE_LIST_{S-p} contains an entry, copy the entry to ZONE_LIST_S and disable the corresponding entry timer.
- Delete all entries of SID_NID_LIST_S.
- If SID_NID_LIST_{S-p} contains an entry, copy the entry to SID_NID_LIST_S and disable the corresponding entry timer.
- Set the registered flag (REGISTERED_S) to NO.
- Set timer-based registration enable status (COUNTER_ENABLED_S) to NO.
- Set autonomous registration enable status (REG_ENABLED_S) to NO.
- Set RETURN_CAUSE_S to '0000'.

Upon switching from using CDMA in a different band class, from using CDMA in a different Band Class 0 serving system, from using CDMA in a different Band Class 1 frequency block, or from using the 800 MHz analog system, the mobile station shall perform the following actions:

- Set timer-based registration enable status (COUNTER_ENABLED_S) to NO.
- Set autonomous registration enable status (REG_ENABLED_S) to NO.
- Set RETURN_CAUSE_S to '0000'.

6.6.5.5.1.2 Timer Maintenance

While in the *Mobile Station Initialization State*, the mobile station shall update all active registration timers (see 6.6.5.4). If any timer expires while in this state, the mobile station shall preserve the expiration status so that further action can be taken in the *Mobile Station Idle State*.

6.6.5.5.1.3 Entering the Mobile Station Idle State

Before entering the *Mobile Station Idle State* from the *Mobile Station Initialization State*, the mobile station shall perform the following action:

- If REGISTERED_S is equal to NO, enable the power-up/initialization timer with an expiration time of T_{57m} seconds (see 6.6.5.1.1) only when the mobile station is entering this state with a power-up indication.

6.6.5.5.2 Actions in the Mobile Station Idle State

Requirements in this section and its subsections apply only when the mobile station is in the *Mobile Station Idle State*.

6.6.5.5.2.1 Idle Registration Procedures

These procedures are performed whenever the mobile station is in the *Mobile Station Idle State* (see 6.6.2.1.3).

While in the *Mobile Station Idle State*, the mobile station shall update all active registration timers (see 6.6.5.4).

If the power-up/initialization timer has expired or is disabled, the mobile station shall perform the following actions in the order given. If any action necessitates a registration, the mobile station shall enter the *Update Overhead Information Substate* of the *System Access State* (see 6.6.3) with a registration indication.

1. The timer-based registration timer shall be enabled (COUNTER_ENABLED_S = YES) and the timer count (REG_COUNT_S) shall be set to a pseudorandom number as specified in 6.6.5.1.3, if the following conditions are met:
 - a. COUNTER_ENABLED_S is equal to NO; and
 - b. The stored configuration parameters are current (see 6.6.2.2); and
 - c. REG_ENABLED_S is equal to YES; and
 - d. REG_PRD_S is not equal to zero.
2. If any zone list entry timer (see 6.6.5.1.5) has expired, the mobile station shall delete the corresponding entry from ZONE_LIST_S.
3. If any SID/NID list entry timer (see 6.6.5.1.5) has expired, the mobile station shall delete the corresponding entry from SID_NID_LIST_S.
4. The mobile station shall perform power-up registration, as specified in 6.6.5.1.1, if all the following conditions are met:
 - a. POWER_UP_REG_S is equal to '1'; and
 - b. The stored configuration parameters are current (see 6.6.2.2); and
 - c. REGISTERED_S is equal to NO, and
 - d. REG_ENABLED_S is equal to YES.
5. The mobile station shall perform parameter-change registration (see 6.6.5.1.6) if all the following conditions are met:
 - a. PARAMETER_REG_S is equal to '1'; and
 - b. The stored configuration parameters are current (see 6.6.2.2); and
 - c. There is no entry of SID_NID_LIST_S whose SID and NID fields match the stored SID_S and NID_S.

- 1 6. The mobile station shall perform timer-based registration (see 6.6.5.1.3) if all the
2 following conditions are met:
 - 3 a. COUNTER_ENABLED_S is equal to YES; and
 - 4 b. The stored configuration parameters are current (see 6.6.2.2); and
 - 5 c. REG_ENABLED_S is equal to YES; and
 - 6 d. REG_COUNT_S is greater than or equal to REG_COUNT_MAX_S.
- 7 7. The mobile station shall perform distance-based registration (see 6.6.5.1.4) if all the
8 following conditions are met:
 - 9 a. REG_DIST_S is not equal to zero; and
 - 10 b. The stored configuration parameters are current (see 6.6.2.2); and
 - 11 c. REG_ENABLED_S is equal to YES; and
 - 12 d. The current base station's distance from the base station in which the mobile
13 station last registered (see 6.6.5.1.4) is greater than or equal to
14 REG_DIST_REG_{S-p}.
- 15 8. The mobile station shall perform zone-based registration (see 6.6.5.1.5) if all the
16 following conditions are met:
 - 17 a. TOTAL_ZONES_S is not equal to zero; and
 - 18 b. The stored configuration parameters are current (see 6.6.2.2); and
 - 19 c. REG_ENABLED_S is equal to YES; and
 - 20 d. There is no entry of ZONE_LIST_S whose SID, NID and REG_ZONE fields match
21 the stored SID_S, NID_S and REG_ZONE_S.

22 6.6.5.5.2.2 Processing the Registration Fields of the System Parameters Message

23 When the mobile station processes the *System Parameters Message*, it shall perform the
24 following actions:

- 25 1. If REG_PRD_S is equal to zero, the mobile station shall set COUNTER_ENABLED_S to
26 NO.
- 27 2. If REG_PRD_S is not equal to zero, the mobile station shall set REG_COUNT_MAX_S as
28 specified in 6.6.5.1.3.
- 29 3. The mobile station shall update its roaming status and set REG_ENABLED_S as
30 specified in 6.6.5.3.
- 31 4. If ZONE_LIST_S contains more than TOTAL_ZONES_S entries, the mobile station shall
32 delete the excess entries according to the rules specified in 6.6.5.1.5.
- 33 5. If MULT_SIDS_S is equal to '0' and SID_NID_LIST contains entries with different
34 SIDs, delete the excess entries according to the rules specified in 6.6.5.1.5.
- 35 6. If MULT_NIDS_S is equal to '0' and SID_NID_LIST contains more than one entry for
36 any SID, delete the excess entries according to the rules specified in 6.6.5.1.5.

6.6.5.5.2.3 Ordered Registration

Ordered registration is performed after receiving a *Registration Request Order* while in the *Mobile Station Order and Message Processing Operation* (see 6.6.2.4).

The mobile station shall enter the *Update Overhead Information Substate* of the *System Access State* with a registration indication within T_{33m} seconds after the *Registration Request Order* is received.

6.6.5.5.2.4 Power Off

These procedures are performed when the mobile station is directed by the user to power off.

The mobile station shall perform the following actions:

- If an entry of $ZONE_LIST_S$ does not have an active timer, copy that entry to $ZONE_LIST_{S-p}$; otherwise, delete any entry in $ZONE_LIST_{S-p}$.
- If an entry of $SID_NID_LIST_S$ does not have an active timer, copy that entry to $SID_NID_LIST_{S-p}$; otherwise, delete any entry in $SID_NID_LIST_{S-p}$.

The mobile station shall perform power-down registration (see 6.6.5.1.2) by entering the *System Access State* with a registration indication within T_{33m} seconds after the user directs the mobile station to power off, if all the following conditions are true:

- $REG_ENABLED_S$ equals YES; and
- $POWER_DOWN_REG_S$ equals '1'; and
- There is an entry of $SID_NID_LIST_S$ for which the SID and NID fields are equal to SID_S and NID_S ; and
- The power-up/initialization timer (see 6.6.5.1.1) is disabled or has expired.

6.6.5.5.2.5 Full-TMSI Timer Expiration

When the mobile station sets all the bits of $TMSI_CODE_{S-p}$ to '1' upon expiration of the full-TMSI timer (see 6.6.2), the mobile station shall delete all entries from $SID_NID_LIST_S$ and $ZONE_LIST_S$.

6.6.5.5.3 Actions in the System Access State

Requirements in this section and its subsections apply only when the mobile station is in the *System Access State*.

6.6.5.5.3.1 Successful Access, Registration, or Implicit Registration

These procedures shall be performed after the mobile station receives an acknowledgment for a *Registration Message*, *Origination Message*, or *Page Response Message* sent on the Access Channel (see 6.6.3.1.2).

- Disable the power-up/initialization timer (see 6.6.5.1.1).
- If the mobile station supports the 800 MHz analog mode, set the First-Idle ID status to enabled (see 2.6.3.11).

- 1 • Set DIGITAL_REG_{S-p} to '00000001'.
- 2 • Set REG_COUNT_S to zero.
- 3 • Set REGISTERED_S to YES.
- 4 • Delete all entries from ZONE_LIST_S belonging to a different band class (see 6.1.1.1)
- 5 than CDMABAND_S.
- 6 • If CDMABAND = '00000', delete all entries from ZONE_LIST_S that have a SID from a
- 7 different serving system than SERVSYS_S.
- 8 • If CDMABAND = '00001', delete all entries from ZONE_LIST_S belonging to a different
- 9 PCS frequency block (see 6.1.1.1) than the PCS frequency block associated with
- 10 SID_S.
- 11 • Add REG_ZONE_S, SID_S, and NID_S to ZONE_LIST_S if not already in the list. If
- 12 required, include the band class identifier and block identifier for the current band
- 13 and PCS frequency block as specified in 6.6.5.1.5.
- 14 • Disable the zone list entry timer for the entry of ZONE_LIST_S containing
- 15 REG_ZONE_S, SID_S, and NID_S. For any other entry of ZONE_LIST_S whose entry timer
- 16 is not active, enable the entry timer with the duration specified by ZONE_TIMER_S
- 17 (see 6.6.5.1.5).
- 18 • If ZONE_LIST_S contains more than TOTAL_ZONES_S entries, delete the excess entries
- 19 according to the rules specified in 6.6.5.1.5.
- 20 • Delete all entries from SID_NID_LIST_S belonging to a different band class (see
- 21 6.1.1.1) than CDMABAND_S.
- 22 • If CDMABAND = '00000', delete all entries from SID_NID_LIST_S that have a SID from
- 23 a different serving system than SERVSYS_S.
- 24 • If CDMABAND = '00001', delete all entries from SID_NID_LIST_S belonging to a
- 25 different PCS frequency block (see 6.1.1.1) than the PCS frequency block associated
- 26 with SID_S.
- 27 • Add SID_S and NID_S to SID_NID_LIST_S if not already in the list. If required, include
- 28 the band class identifier and block identifier for the current band and PCS
- 29 frequency block as specified in 6.6.5.1.5.
- 30 • Disable the SID/NID list entry timer for the entry of SID_NID_LIST_S containing SID_S,
- 31 and NID_S. For any other entry of SID_NID_LIST_S whose entry timer is not active,
- 32 enable the entry timer with the duration specified in 6.6.5.1.5.
- 33 • If SID_NID_LIST_S contains more than N_{10m} entries, delete the excess entries
- 34 according to the rules specified in 6.6.5.1.5.
- 35 • If MULT_SIDS_S is equal to '0' and SID_NID_LIST contains entries with different
- 36 SIDs, delete the excess entries according to the rules specified in 6.6.5.1.5.
- 37 • If MULT_NIDS_S is equal to '0' and SID_NID_LIST contains more than one entry for
- 38 any SID, delete the excess entries according to the rules specified in 6.6.5.1.5.

- Set the stored location of last registration ($\text{BASE_LAT_REG}_{s-p}$ and $\text{BASE_LONG_REG}_{s-p}$) to the current base station's location (BASE_LAT_s and BASE_LONG_s). Set the stored registration distance ($\text{REG_DIST_REG}_{s-p}$) to the current base station's registration distance (REG_DIST_s).

These procedures shall be performed after the mobile station receives an acknowledgment for any other message:

- If the mobile station supports the 800 MHz analog mode, set the First-Idle ID status to enabled (see 2.6.3.11).
- Set DIGITAL_REG_{s-p} to '00000001'.
- Delete all entries from ZONE_LIST_s belonging to a different band class (see 6.1.1.1) than CDMABAND_s .
- Delete all entries from ZONE_LIST_s belonging to a different band class (see 6.1.1.1) than CDMABAND_s .
- If $\text{CDMABAND} = '00000'$, delete from ZONE_LIST_s all entries from ZONE_LIST_s that have a SID from a different serving system than SERVSYS_s .
- If $\text{CDMABAND} = '00001'$, delete all entries from ZONE_LIST_s belonging to a different PCS frequency block (see 6.1.1.1) than the PCS frequency block associated with SID_s .
- For any entry of ZONE_LIST_s not matching REG_ZONE_s , SID_s , and NID_s and not having an active entry timer, enable the entry timer with the duration specified by ZONE_TIMER_s (see 6.6.5.1.5).
- Delete all entries from SID_NID_LIST_s belonging to a different band class (see 6.1.1.1) than CDMABAND_s .
- If $\text{CDMABAND} = '00000'$, delete from SID_NID_LIST_s all entries from SID_NID_LIST_s that have a SID from a different serving system than SERVSYS_s .
- If $\text{CDMABAND} = '00001'$, delete all entries from SID_NID_LIST_s belonging to a different PCS frequency block (see 6.1.1.1) than the PCS frequency block associated with SID_s .
- For any entry of SID_NID_LIST_s not matching SID_s and NID_s and not having an active entry timer, enable the entry timer with the duration specified by ZONE_TIMER_s (see 6.6.5.1.5).

6.6.5.5.3.2 Unsuccessful Access

These procedures are performed when the mobile station declares an access attempt failure when in the System Access State (see 6.6.3).

The mobile station shall perform the following actions:

- If the mobile station supports the 800 MHz analog mode, set the First-Idle ID status to enabled (see 2.6.3.11).
- Set DIGITAL_REG_{s-p} to '00000001'.

- 1 • Delete all entries from ZONE_LIST_s belonging to a different band class (see 6.1.1.1)
- 2 than CDMABAND_s.
- 3 • If CDMABAND = '00000', delete from ZONE_LIST_s all entries from ZONE_LIST_s that
- 4 have a SID from a different serving system than SERVSYS_s.
- 5 • If CDMABAND = '00001', delete all entries from ZONE_LIST_s belonging to a different
- 6 PCS frequency block (see 6.1.1.1) than the PCS frequency block associated with
- 7 SID_s.
- 8 • For any entry of ZONE_LIST_s not matching REG_ZONE_s, SID_s, and NID_s and not
- 9 having an active entry timer, enable the entry timer with the duration specified by
- 10 ZONE_TIMER_s (see 6.6.5.1.5).
- 11 • Delete all entries from SID_NID_LIST_s belonging to a different band class (see
- 12 6.1.1.1) than CDMABAND_s.
- 13 • If CDMABAND = '00000', delete from SID_NID_LIST_s all entries from SID_NID_LIST_s
- 14 that have a SID from a different serving system than SERVSYS_s.
- 15 • If CDMABAND = '00001', delete all entries from SID_NID_LIST_s belonging to a
- 16 different PCS frequency block (see 6.1.1.1) than the PCS frequency block associated
- 17 with SID_s.
- 18 • Delete from SID_NID_LIST_s all entries that have a SID from a different serving
- 19 system than SERVSYS_s.
- 20 • For any entry of SID_NID_LIST_s not matching SID_s and NID_s and not having an
- 21 active entry timer, enable the entry timer with the duration specified by
- 22 ZONE_TIMER_s (see 6.6.5.1.5).

23 6.6.5.5.3.3 Power Off

24 These procedures are performed when the mobile station is directed by the user to power
25 off.

26 The mobile station shall perform the following actions:

- 27 • If an entry of ZONE_LIST_s does not have an active timer, copy that entry to
- 28 ZONE_LIST_{s-p}; otherwise, delete any entry in ZONE_LIST_{s-p}.
- 29 • If an entry of SID_NID_LIST_s does not have an active timer, copy that entry to
- 30 SID_NID_LIST_{s-p}; otherwise, delete any entry in SID_NID_LIST_{s-p}.

31 6.6.5.5.4 Actions in the Mobile Station Control on the Traffic Channel State

32 Requirements in this section and its subsections apply only when the mobile station is in
33 the *Mobile Station Control on the Traffic Channel State*.

34 6.6.5.5.4.1 Traffic Channel Initialization

35 Upon entering the *Traffic Channel Initialization Substate* of the *Mobile Station Control on the*
36 *Traffic Channel State*, the mobile station shall set COUNTER_ENABLED_s to NO.

6.6.5.5.4.2 Timer Maintenance

While in the *Mobile Station Control on the Traffic Channel State*, the mobile station shall update all active registration timers.

If a zone list entry timer expires, the mobile station shall delete the corresponding entry from $ZONE_LIST_S$. If a SID/NID list entry timer expires, the mobile station shall delete the corresponding entry from $SID_NID_LIST_S$.

6.6.5.5.4.3 Processing the Mobile Station Registered Message

The mobile station receives the *Mobile Station Registered Message* on the Forward Traffic Channel when the mobile station is considered registered for the base station whose location and other parameters are included in the message.

The mobile station shall store the following parameters:

- System identification ($SID_S = SID_T$)
- Network identification ($NID_S = NID_T$)
- Registration zone ($REG_ZONE_S = REG_ZONE_T$)
- Number of registration zones to be retained ($TOTAL_ZONES_S = TOTAL_ZONES_T$)
- Zone timer length ($ZONE_TIMER_S = ZONE_TIMER_T$)
- Multiple SID storage indicator ($MULT_SIDS_S = MULT_SIDS_T$)
- Multiple NID storage indicator ($MULT_NIDS_S = MULT_NIDS_T$)
- Base station latitude ($BASE_LAT_S = BASE_LAT_T$)
- Base station longitude ($BASE_LONG_S = BASE_LONG_T$)
- Registration distance ($REG_DIST_S = REG_DIST_T$)

The mobile station shall perform the following actions:

- If the mobile station supports the 800 MHz analog mode, set the First-Idle ID status to enabled (see 2.6.3.11).
- Set $DIGITAL_REG_{S-p}$ to '00000001'.
- Add REG_ZONE_S , SID_S , and NID_S to $ZONE_LIST_S$ if not already in the list. If required, include the band class identifier and block identifier for the current band and PCS frequency block as specified in 6.6.5.1.5.
- Delete all entries from $ZONE_LIST_S$ belonging to a different band class (see 6.1.1.1) than $CDMABAND_S$.
- Disable the zone list entry timer for the entry of $ZONE_LIST_S$ containing REG_ZONE_S , SID_S , and NID_S . For any other entry of $ZONE_LIST_S$ whose entry timer is not active, enable the entry timer with the duration specified by $ZONE_TIMER_S$ (see 6.6.5.1.5).
- If $ZONE_LIST_S$ contains more than $TOTAL_ZONES_S$ entries, delete the excess entries according to the rules specified in 6.6.5.1.5.

- 1 • Delete all entries from $SID_NID_LIST_S$ belonging to a different band class (see
2 6.1.1.1) than $CDMABAND_S$.
- 3 • Add SID_S and NID_S to $SID_NID_LIST_S$ if not already in the list. If required, include
4 the band class identifier and block identifier for the current band and PCS
5 frequency block as specified in 6.6.5.1.5.
- 6 • Disable the SID/NID list entry timer for the entry of $SID_NID_LIST_S$ containing SID_S ,
7 and NID_S . For any other entry of $SID_NID_LIST_S$ whose entry timer is not active,
8 enable the entry timer with the duration specified in 6.6.5.1.5.
- 9 • If $SID_NID_LIST_S$ contains more than N_{10m} entries, delete the excess entries
10 according to the rules specified in 6.6.5.1.5.
- 11 • If $MULT_SIDS_S$ is equal to '0' and SID_NID_LIST contains entries with different
12 SIDs, delete the excess entries according to the rules specified in 6.6.5.1.5.
- 13 • If $MULT_NIDS_S$ is equal to '0' and SID_NID_LIST contains more than one entry for
14 any SID, delete the excess entries according to the rules specified in 6.6.5.1.5.
- 15 • Set the stored location of last registration ($BASE_LAT_REG_{S-p}$ and $BASE_LONG_REG_{S-p}$) to the base station's location ($BASE_LAT_S$ and $BASE_LONG_S$). Set the
16 stored registration distance ($REG_DIST_REG_{S-p}$) to the base station's registration
17 distance (REG_DIST_S).
- 18 • Update its roaming status and set MOB_TERM_S as specified in 6.6.5.3. The mobile
19 station should indicate to the user whether the mobile station is roaming.
20

21 6.6.5.5.4.4 Power Off

22 These procedures are performed when the mobile station is directed by the user to power
23 off.

24 The mobile station shall perform the following actions:

- 25 • If an entry of $ZONE_LIST_S$ does not have an active timer, copy that entry to
26 $ZONE_LIST_{S-p}$; otherwise, delete the entry in $ZONE_LIST_{S-p}$ if $ZONE_LIST_{S-p}$
27 contains an entry.
- 28 • If an entry of $SID_NID_LIST_S$ does not have an active timer, copy that entry to
29 $SID_NID_LIST_{S-p}$; otherwise, delete the entry in $SID_NID_LIST_{S-p}$ if $SID_NID_LIST_{S-p}$
30 contains an entry.

31 6.6.6 Handoff Procedures

32 This section presents an overview and mobile station requirements for handoffs occurring
33 while the mobile station is in the *Mobile Station Control on the Traffic Channel State* (see
34 6.6.4). Mobile station requirements for handoffs occurring while the mobile station is in the
35 *Mobile Station Idle State* are specified in 6.6.2.1.4.

6.6.6.1 Overview

6.6.6.1.1 Types of Handoff

The mobile station supports the following three handoff procedures while in the *Mobile Station Control on the Traffic Channel State*:

- *Soft Handoff*: A handoff in which the mobile station commences communications with a new base station without interrupting communications with the old base station. Soft handoff can only be used between CDMA Channels having identical frequency assignments. Soft handoff provides diversity of Forward Traffic Channels and Reverse Traffic Channel paths on the boundaries between base stations.
- *CDMA-to-CDMA Hard Handoff*: A handoff in which the mobile station is transitioned between disjoint sets of base stations, different band classes, different frequency assignments, or different frame offsets.
- *CDMA-to-Analog Handoff*: A handoff in which the mobile station is directed from a CDMA traffic channel to an analog voice channel.

The mobile station shall support soft handoffs on the same frequency assignment (see 6.6.6.2.7). The mobile station shall support CDMA-to-CDMA hard handoffs between band classes on which it supports CDMA operation (see 6.6.6.2.8). The mobile station shall support CDMA-to-analog handoffs from band classes on which it supports CDMA operation to band classes on which it supports analog operation (see 6.6.6.2.9).

6.6.6.1.2 Pilot Sets

Within section 6.6.6 the term pilot refers to a Pilot Channel identified by a pilot sequence offset (see 7.1.3.2.1) and a frequency assignment (see 7.1.1.1). A pilot is associated with the Forward Traffic Channels in the same Forward CDMA Channel. All pilots in a pilot set have the same CDMA frequency assignment.

The mobile station searches for pilots on the current CDMA frequency assignment to detect the presence of CDMA Channels and to measure their strengths. When the mobile station detects a pilot of sufficient strength that is not associated with any of the Forward Traffic Channels assigned to it, it sends a *Pilot Strength Measurement Message* to the base station. The base station can then assign a Forward Traffic Channel associated with that pilot to the mobile station and direct the mobile station to perform a handoff.

The pilot search parameters and the rules for *Pilot Strength Measurement Message* transmission are expressed in terms of the following sets of pilots:

- *Active Set*: The pilots associated with the Forward Traffic Channels assigned to the mobile station.
- *Candidate Set*: The pilots that are not currently in the Active Set but have been received by the mobile station with sufficient strength to indicate that the associated Forward Traffic Channels could be successfully demodulated.
- *Neighbor Set*: The pilots that are not currently in the Active Set or the Candidate Set and are likely candidates for handoff.

- *Remaining Set*: The set of all possible pilots in the current system on the current CDMA frequency assignment, excluding the pilots in the Neighbor Set, the Candidate Set, and the Active Set. This set of possible pilots consists of pilots whose pilot PN sequence offset indices are integer multiples of $PILOT_INC_S$.

The base station may direct the mobile station to search for pilots on a different CDMA frequency to detect the presence of CDMA Channels and to measure their strengths. The mobile station reports the results of the search to the base station using the *Candidate Frequency Search Report Message*. Depending upon the pilot strength measurements reported in the *Candidate Frequency Search Report Message*, the base station can direct the mobile station to perform an inter-frequency hard handoff.

The pilot search parameters are expressed in terms of the following sets of pilots on the CDMA Candidate Frequency:

- *Candidate Frequency Neighbor Set*: A list of pilots on the CDMA Candidate Frequency.
- *Candidate Frequency Search Set*: A subset of the Candidate Frequency Neighbor Set that the base station may direct the mobile station to search.

6.6.6.2 Requirements

6.6.6.2.1 Pilot Search

For the pilot sets defined in 6.6.6.1.2, the base station sets the search window (range of PN offsets) in which the mobile station is to search for usable multipath components (i.e., multipath components that the mobile station can use for demodulation of the associated Forward Traffic Channel) of the pilots in the set.

Search performance criteria are defined in TIA/EIA-98-B and ANSI J-STD-018.

This search shall be governed by the following:

- *Active Set and Candidate Set*: The search procedures for pilots in the Active Set and Candidate Set shall be identical. The search window size¹² for each pilot in the Active Set and Candidate Set shall be the number of PN chips specified in Table 6.6.6.2.1-1 corresponding to $SRCH_WIN_A_S$. The mobile station should center the search window for each pilot of the Active Set and Candidate Set around the earliest arriving usable multipath component of the pilot. If the mobile station receives a value greater than or equal to 13 for $SRCH_WIN_A_r$, it may store and use the value 13 in $SRCH_WIN_A_S$.

¹² The table defines the entire search range. For example, $SRCH_WIN_A_S = 6$ corresponds to a 28 PN chip search window or ± 14 PN chips around the search window center.

Table 6.6.6.2.1-1. Searcher Window Sizes

| SRCH_WIN_A SRCH_WIN_N SRCH_WIN_NGHR SRCH_WIN_R CF_SRCH_WIN_N | Window Size (PN chips) | SRCH_WIN_A SRCH_WIN_N SRCH_WIN_NGHR SRCH_WIN_R CF_SRCH_WIN_N | Window Size (PN chips) |
|--|---------------------------|--|---------------------------|
| 0 | 4 | 8 | 60 |
| 1 | 6 | 9 | 80 |
| 2 | 8 | 10 | 100 |
| 3 | 10 | 11 | 130 |
| 4 | 14 | 12 | 160 |
| 5 | 20 | 13 | 226 |
| 6 | 28 | 14 | 320 |
| 7 | 40 | 15 | 452 |

- Neighbor Set:** If SRCH_WIN_NGHR_INCL_S is equal to '1', the search window size for each pilot in the Neighbor Set shall be the number of PN chips specified in Table 6.6.6.2.1-1, corresponding to SRCH_WIN_NGHR_S associated with the pilot being searched. If SRCH_WIN_NGHR_INCL_S is equal to '0', the search window size for each pilot in the Neighbor Set shall be the number of PN chips specified in Table 6.6.6.2.1-1 corresponding to SRCH_WIN_N_S. The mobile station should center the search window for each pilot in the Neighbor Set around the pilot's PN sequence offset, using timing defined by the mobile station's time reference (see 6.1.5.1). If SEARCH_PRIORITY_INCL_S is equal to '1', the mobile station should use SEARCH_PRIORITY_S for the corresponding pilot to schedule its neighbor search. If the mobile station supports hopping pilot beacons and the TIMING_INCL field of the NGHBR_REC for the corresponding pilot is equal to '1', then the mobile station shall use the information included in the NGHBR_TX_OFFSET, NGHBR_TX_DURATION, and NGHBR_TX_PERIOD fields of the NGHBR_REC for the corresponding pilot to schedule the time for searching the neighbor.
- Remaining Set:** The search window size for each pilot in the Remaining Set shall be the number of PN chips specified in Table 6.6.6.2.1-1 corresponding to SRCH_WIN_R_S. The mobile station should center the search window for each pilot in the Remaining Set around the pilot's PN sequence offset, using timing defined by the mobile station's time reference (see 6.1.5.1). The mobile station should only search for Remaining Set pilots whose pilot PN sequence offset indices are equal to integer multiples of PILOT_INC_S.

- *Candidate Frequency Search Set:* If $CF_SRCH_WIN_NGHBRN_INCL_S$ is equal to '1', the search window size for each pilot in the candidate frequency search set shall be the number of PN chips specified in Table 6.6.6.2.1-1, corresponding to $SRCH_WIN_NGHBR_S$ associated with the pilot being searched. If $CF_SRCH_WIN_NGHBR_INCL_S$ is equal to '0', the search window size for each pilot in the Candidate Frequency Search Set shall be the number of PN chips specified in Table 6.6.6.2.1-1 corresponding to $CF_SRCH_WIN_N_S$. The mobile station should center the search window for each pilot in the Candidate Frequency Search Set around the pilot's PN sequence offset using timing defined by the mobile station's time reference (see 6.1.5.1). If $CF_SEARCH_PRIORITY_INCL_S$ is equal to '1', the mobile station should use $SEARCH_PRIORITY_S$ associated with each pilot to schedule a search of its Candidate Frequency Search Set.

6.6.6.2.2 Pilot Strength Measurements

The mobile station assists the base station in the handoff process and in the Reverse Supplemental Code Channel operation by measuring and reporting the strengths of received pilots.

The mobile station should use the searcher element (see 6.2.2.1) to compute the strength of a pilot by adding the ratios of received pilot energy per chip, E_c , to total received spectral density (noise and signals), I_o , of at most k usable multipath components, where k is the number of demodulating elements (see 6.2.2.1) supported by the mobile station.

6.6.6.2.3 Handoff Drop Timer

The mobile station shall maintain a handoff drop timer for each pilot in the Active Set and Candidate Set.

If $P_REV_IN_USE_S$ is less than or equal to three or $SOFT_SLOPE_S$ is equal to '000000', the mobile station shall perform the following:

- For the Candidate Set, the mobile station shall start the timer whenever the strength of the corresponding pilot becomes less than T_DROP_S . The mobile station shall reset and disable the timer if the strength of the corresponding pilot exceeds T_DROP_S .
- For the Active Set, the mobile station shall start the timer whenever the strength of the corresponding pilot becomes less than T_DROP_S . The mobile station shall start the timer even if the timer has previously expired. The mobile station shall reset and disable the timer if the strength of the corresponding pilot exceeds T_DROP_S .

If $P_REV_IN_USE_S$ is greater than three and $SOFT_SLOPE_S$ is not equal to '000000', the mobile station shall perform the following:

- For the Candidate Set, the mobile station shall start the timer whenever the strength of the corresponding pilot becomes less than T_DROP_S . The mobile station shall reset and disable the timer if the strength of the corresponding pilot exceeds T_DROP_S .

- For the Active Set, the mobile station shall sort the N_A pilots in the Active Set in order of increasing strengths, i.e., $PS_1 < PS_2 < PS_3 < \dots < PS_{N_A}$ where the strength PS is as defined in 6.6.6.2.2. The mobile station shall start the timer whenever the strength PS_i satisfies the following inequality:

$$10 \times \log_{10} PS_i < \max\left(\frac{\text{SOFT_SLOPE}_S}{8} \times 10 \times \log_{10} \sum_{j>i} PS_j + \frac{\text{DROP_INTERCEPT}_S}{2}, \frac{T_DROP_S}{2}\right)$$

$i = 1, 2, \dots, PS_{N_A} - 1$

For the Active Set, the mobile station shall start the timer even if the timer has previously expired. The mobile station shall reset and disable the timer whenever the above inequality is not satisfied for the corresponding pilot.

If T_TDROP_S equals zero, the mobile station shall consider the timer expired within 100 ms of enabling it. Otherwise, the mobile station shall consider the timer expired within 10% of the timer expiration value shown in Table 6.6.6.2.3.-1 corresponding to T_TDROP_S . If T_TDROP_S changes, the mobile station shall begin using the new value for all handoff drop timers within 100 ms.

Table 6.6.6.2.3-1. Handoff Drop Timer Expiration Values

| T_TDROP | Timer Expiration (seconds) | T_TDROP | Timer Expiration (seconds) |
|------------|----------------------------|------------|----------------------------|
| 0 | ≤ 0.1 | 8 | 27 |
| 1 | 1 | 9 | 39 |
| 2 | 2 | 10 | 55 |
| 3 | 4 | 11 | 79 |
| 4 | 6 | 12 | 112 |
| 5 | 9 | 13 | 159 |
| 6 | 13 | 14 | 225 |
| 7 | 19 | 15 | 319 |

The mobile station shall indicate the status of the handoff drop timer for all pilots in the Active Set and Candidate Set when transmitting a *Pilot Strength Measurement Message*.

6.6.6.2.4 Pilot PN Phase

The mobile station shall measure the arrival time, PILOT_ARRIVAL, for each pilot reported to the base station. The pilot arrival time shall be the time of occurrence, as measured at the mobile station antenna connector, of the earliest arriving usable multipath component of the pilot. The arrival time shall be measured relative to the mobile station's time reference (see 6.1.5.1) in units of PN chips. The mobile station shall compute the reported pilot PN phase, PILOT_PN_PHASE, as

$$\text{PILOT_PN_PHASE} = (\text{PILOT_ARRIVAL} + (64 \times \text{PILOT_PN})) \bmod 2^{15},$$

where PILOT_PN is the PN sequence offset index of the pilot (see 7.1.3.2.1).

6.6.6.2.5 Handoff Messages

6.6.6.2.5.1 Processing of Forward Traffic Channel Handoff Messages

If the mobile station receives any of the following messages, then the mobile station shall process the message as described.

1. *Pilot Measurement Request Order*: The mobile station shall send, within T_{56m} seconds, a *Pilot Strength Measurement Message*.
2. *Analog Handoff Direction Message*: The mobile station shall process the message as specified in 6.6.6.2.9.
3. *Neighbor List Update Message*: The mobile station shall process the message as specified in 6.6.6.2.6.3 and set SEARCH_PRIORITY_INCL_s and SRCH_WIN_NGHR_INCL_s to '0', and set TIMING_INCL for each of the neighboring base stations in the *Neighbor List Update Message* to '0'.
4. *Extended Handoff Direction Message*: The mobile station shall process the message as follows:

The mobile station shall send a *Mobile Station Reject Order* with the ORDQ field set to '00000110' (capability not supported), if the mobile station does not support the band class specified in the *Extended Handoff Direction Message*.

When the message takes effect, the mobile station shall perform the following:

- Update the Active Set, Candidate Set, and Neighbor Set in accordance with the *Extended Handoff Direction Message* processing (see 6.6.6.2.6.1, 6.6.6.2.6.2, and 6.6.6.2.6.3).
- Discontinue use of all Forward Traffic Channels associated with pilots not listed in the *Extended Handoff Direction Message*.
- The mobile station shall update the Code Channel List, CODE_CHAN_LIST_s, as specified in 6.6.8.
- If the mobile station is currently processing Forward Supplemental Code Channels, then it shall continue processing the Forward Supplemental Code Channels using the updated Code Channel List, CODE_CHAN_LIST_s.
- If HARD_INCLUDED is equal to '1', perform the following actions:

- 1 - If FRAME_OFFSET_T is not equal to FRAME_OFFSET_S , change the frame
2 offset on all of the code channels of the Forward Traffic Channel and of the
3 Reverse Traffic Channel.
- 4 - If RESET_L2_T is equal to '1', reset the acknowledgment procedures as
5 specified in 6.6.4.1.3.3. The acknowledgment procedures shall be reset
6 immediately after the action time of the *Extended Handoff Direction Message*.
- 7 - If RESET_FPC_T is equal to '1', initialize the Forward Traffic Channel power
8 control counters as specified in 6.6.4.1.1.1.
- 9 - If SERV_NEG_TYPE_T is equal to '1', set SERV_NEG_S to enabled; otherwise set
10 SERV_NEG_S to disabled. For operation in Band Class 1, SERV_NEG_S is
11 always equal to enabled.
- 12 - Use the long code mask specified by the PRIVATE_LCM_T (see 6.3.12.3) and
13 indicate to the user the voice privacy mode status.
- 14 - Process the ENCRYPT_MODE field as specified in 6.3.12.2.
- 15 • Store the following parameters from the current configuration:
16 - Serving frequency assignment ($\text{SF_CDMACH}_S = \text{CDMACH}_S$)
17 - Serving frequency band class ($\text{SF_BAND_CLASS}_S = \text{BAND_CLASS}_S$)
18 - Serving Frequency frame offset ($\text{SF_FRAME_OFFSET}_S = \text{FRAME_OFFSET}_S$)
19 • If HARD_INCLUDED is not equal to '1', set $\text{NUM_PREAMBLE}_S = '000'$.
- 20 • Store the following parameters from the *Extended Handoff Direction Message*:
21 - *Extended Handoff Direction Message* sequence number ($\text{HDM_SEQ}_S =$
22 HDM_SEQ_T)
23 - If SEARCH_INCLUDED is equal to '1', then store the following:
24 + Search window size for the Active Set and Candidate Set
25 ($\text{SRCH_WIN_A}_S = \text{SRCH_WIN_A}_T$)
26 + Pilot detection threshold ($\text{T_ADD}_S = \text{T_ADD}_T$)
27 + Pilot drop threshold ($\text{T_DROP}_S = \text{T_DROP}_T$)
28 + Active Set versus Candidate Set comparison threshold
29 ($\text{T_COMP}_S = \text{T_COMP}_T$)
30 + Drop timer value ($\text{T_TDROP}_S = \text{T_TDROP}_T$)
31 - If HARD_INCLUDED is equal to '1', then store the following:
32 + Frame offset ($\text{FRAME_OFFSET}_S = \text{FRAME_OFFSET}_T$)
33 + Nominal power setting of the target cell ($\text{NOM_PWR}_S = \text{NOM_PWR}_T$)
34 + Hard handoff traffic channel preamble count required before transmitting
35 *Handoff Completion Message* ($\text{NUM_PREAMBLE}_S = \text{NUM_PREAMBLE}_T$)
36 + CDMA band class ($\text{CDMABAND}_S = \text{BAND_CLASS}_T$)

- 1 + Frequency assignment ($CDMACH_S = CDMA_FREQ_r$)
- 2 + Nominal power setting of the target cell (If $CDMABAND_S = '00001'$, then
- 3 $NOM_PWR_EXT_S = NOM_PWR_EXT_r$; otherwise, $NOM_PWR_EXT_S = '0'$)
- 4 - One occurrence of $PILOT_PN$ and PWR_COMB_IND for each included
- 5 member of the Active Set.
- 6 - If ADD_LENGTH is not equal to '000', then store the following:
- 7 + Protocol revision level ($P_REV_S = P_REV_r$)
- 8 + Protocol revision level currently in use ($P_REV_IN_USE_S =$ the minimum
- 9 value of P_REV_S and $MOB_P_REV_P$ of the current band class)
- 10 - Disable return on failure ($RETURN_IF_HANDOFF_FAIL_S = '0'$)
- 11 • Perform a soft or hard handoff depending on the following conditions:
- 12 - If $HARD_INCLUDED$ is set to '1' and $BAND_CLASS_r$ is not equal to
- 13 $SF_CDMABAND_S$, $CDMA_FREQ_r$ is not equal to SF_CDMACH_S , or
- 14 $FRAME_OFFSET_r$ is not equal to $SF_FRAME_OFFSET_S$, or if the set of pilots
- 15 specified by the message is disjoint from the Active Set prior to the action
- 16 time of the message, the mobile station shall perform the following:
- 17 + If a Periodic Serving Frequency Pilot Report Procedure is in progress,
- 18 abort the procedure (see 6.6.6.2.12).
- 19 + If a Candidate Frequency periodic search is in progress, abort the
- 20 periodic search (see 6.6.6.2.8.3.4 and 6.6.6.2.10.4) and set
- 21 $PERIODIC_SEARCH_S$ to '0'.
- 22 + Perform the actions specified in 6.6.6.2.8.1. If the message specifies
- 23 more than one pilot, the mobile station shall also perform the actions
- 24 specified in 6.6.6.2.7.1 and 6.6.6.2.7.2.
- 25 - Otherwise, the mobile station shall perform the actions specified in 6.6.6.2.7.
- 26 5. *Candidate Frequency Search Request Message*: The mobile station shall process the
- 27 message as follows:
- 28 The mobile station shall send a *Mobile Station Reject Order* with the $ORDQ$ field set
- 29 to '00000110' (capability not supported), if any of the following conditions is true:
- 30 • $SEARCH_MODE_r$ is not equal to '0000', and the mobile station does not support
- 31 the capability specified by $SEARCH_MODE_r$, or
- 32 • $P_REV_IN_USE_S$ is less than or equal to four, and the mobile station does not
- 33 support mobile-assisted hard handoff.
- 34 If none of the above conditions is true, the mobile station shall perform the actions
- 35 described in the remainder of this section to process the *Candidate Frequency*
- 36 *Search Request Message*.
- 37 If $SEARCH_MODE_r$ is equal to '0000', the mobile station shall process the
- 38 *Candidate Frequency Search Request Message* as follows:

- 1 • The mobile station shall send a *Mobile Station Reject Order* with the ORDQ field
2 set to '00001100' (invalid frequency assignment), if the frequency assignment
3 specified in the message is the same as the Serving Frequency (BAND_CLASS_r is
4 equal to CDMABAND_s and CDMA_FREQ_r is equal to CDMACH_s).
- 5 • The mobile station shall send a *Mobile Station Reject Order* with the ORDQ field
6 set to '00001010' (search set not specified), if SEARCH_TYPE_r is equal to '01' or
7 '11', and one of the following conditions is true:
8 – PILOT_UPDATE_r is equal to '0' and the Candidate Frequency Search Set
9 before the action time of the *Candidate Frequency Search Request Message* is
10 empty, or
11 – PILOT_UPDATE_r is equal to '1' and the message specifies an empty search
12 set.
- 13 • The mobile station shall send a *Mobile Station Reject Order* with the ORDQ field
14 set to '0001101' (search period too short), if SEARCH_TYPE_r is equal to '11' and
15 search_period is less than (max (fwd_time, rev_time) + T_{71m}) seconds, where
16 search_period, fwd_time and rev_time are defined below.
17 (In the following, if PILOT_UPDATE_r is equal to '1', rec_search_set is the set of
18 pilots specified in the *Candidate Frequency Search Request Message* with the
19 corresponding SEARCH_SET field set to '1'; otherwise, rec_search_set is the
20 Candidate Frequency Search Set before the action time of the *Candidate*
21 *Frequency Search Request Message*.)
22 search_period = time period corresponding to SEARCH_PERIOD_r shown in
23 Table 6.6.6.2.8.3.2-1
24 fwd_time = the mobile station's estimate of the total length of time, in
25 seconds, for which the mobile station will need to suspend its
26 current Forward Traffic Channel processing in order to tune to
27 the Candidate Frequency, to search rec_search_set, and to re-
28 tune to the Serving Frequency; if the mobile station searches
29 rec_search_set in multiple visits, fwd_time is the total time for
30 all visits to the Candidate Frequency in a search period (see
31 6.6.6.2.8.3.2)
32 rev_time = the mobile station's estimate of the total length of time, in
33 seconds, for which the mobile station will need to suspend its
34 current Reverse Traffic Channel processing in order to tune to
35 the Candidate Frequency, to search rec_search_set, and to re-
36 tune to the Serving Frequency; if the mobile station searches
37 rec_search_set in multiple visits, rev_time is the total time for all
38 visits to the Candidate Frequency in a search period
- 39 • If the mobile station does not send a *Mobile Station Reject Order* in response to
40 the *Candidate Frequency Search Request Message*, it shall perform the following:

- 1 - The mobile station shall send a *Candidate Frequency Search Response*
2 *Message* as a message requiring an acknowledgment, within T_{56m} seconds
3 of receiving the *Candidate Frequency Search Request Message*. The mobile
4 station shall set the fields of the *Candidate Frequency Search Response*
5 *Message* as follows:
 - 6 + The mobile station shall set `TOTAL_OFF_TIME_FWD` and
7 `TOTAL_OFF_TIME_REV` to its estimate of the total number of frames for
8 which it will need to suspend its current Forward Traffic Channel
9 processing and Reverse Traffic Channel processing, respectively, in order
10 to tune to the Candidate Frequency, to search `rec_search_set`, and to re-
11 tune to the Serving Frequency (see 6.6.6.2.8.3.2). If the mobile station
12 searches `rec_search_set` in multiple visits to the Candidate Frequency,
13 the mobile station shall report the total number of frames in all visits in
14 a search period for which it will need to suspend its current Forward
15 Traffic Channel and the Reverse Traffic Channel processing.
 - 16 + The mobile station shall set `MAX_OFF_TIME_FWD` and
17 `MAX_OFF_TIME_REV` to its estimate of the maximum number of frames
18 for which it will need to suspend its current Forward Traffic Channel
19 processing and Reverse Traffic Channel processing, respectively, during
20 any single visit to tune to the Candidate Frequency, to search a subset of
21 `rec_search_set`, and to re-tune to the Serving Frequency..¹³
- 22 - When the message takes effect, the mobile station shall perform the following
23 actions:
 - 24 + If any periodic search is in progress, the mobile station shall abort it (see
25 6.6.6.2.8.3.4 and 6.6.6.2.10.4).
 - 26 + If `SEARCH_TYPEr` is equal to '00', the mobile station may stop
27 maintaining the average of the Serving Frequency received power that is
28 used in the handoff and search procedures.
 - 29 + If `SEARCH_TYPEr` is equal to '01' or '11', and the mobile station uses
30 received power measurements in the search procedure, it should start
31 monitoring the received power on the Serving Frequency, if it is not
32 already doing so. While it is tuned to the Serving Frequency, the mobile
33 station should measure the received power once every frame (0.02
34 seconds), and should maintain an average of the received power over the
35 last N_{12m} frames.
 - 36 + Store the following parameters from the *Candidate Frequency Search*
37 *Request Message*:

¹³ If the mobile station searches the entire Candidate Frequency Search Set in a single visit to the Candidate Frequency, `TOTAL_OFF_TIME_FWD` will be equal to `MAX_OFF_TIME_FWD`, and `TOTAL_OFF_TIME_REV` will be equal to `MAX_OFF_TIME_REV`.

- 1 o *Candidate Frequency Search Request Message* sequence number
2 (CFSRM_SEQ_S = CFSRM_SEQ_T)
- 3 o Periodic search flag: If SEARCH_TYPE_T is equal to '11', the mobile
4 station shall set PERIODIC_SEARCH_S to '1'; otherwise, the mobile
5 station shall set PERIODIC_SEARCH_S to '0'.
- 6 o Search period on the Candidate Frequency
7 (SEARCH_PERIOD_S = SEARCH_PERIOD_T)
- 8 o Candidate Frequency search mode
9 (SEARCH_MODE_S = SEARCH_MODE_T)
- 10 o Band class for the Candidate Frequency
11 (CF_CDMABAND_S = BAND_CLASS_T)
- 12 o CDMA Channel number for the CDMA Candidate Frequency
13 (CF_CDMACH_S = CDMA_FREQ_T)
- 14 o Serving Frequency total pilot E_C threshold
15 (SF_TOTAL_EC_THRESH_S = SF_TOTAL_EC_THRESH_T)
- 16 o Serving Frequency total pilot E_C/I₀ threshold
17 (SF_TOTAL_EC_IO_THRESH_S = SF_TOTAL_EC_IO_THRESH_T)
- 18 o Received power difference threshold
19 (DIFF_RX_PWR_THRESH_S = DIFF_RX_PWR_THRESH_T)
- 20 o Candidate Frequency Total pilot E_C/I₀ threshold
21 (MIN_TOTAL_PILOT_EC_IO_S = MIN_TOTAL_PILOT_EC_IO_T)
- 22 o Pilot detection threshold on the CDMA Candidate Frequency
23 (CF_T_ADD_S = CF_T_ADD_T)
- 24 o Maximum time on the CDMA Candidate Target Frequency that the
25 mobile station may wait to receive a good frame
26 (TF_WAIT_TIME_S = TF_WAIT_TIME_T)
- 27 o Pilot PN sequence offset increment on the CDMA Candidate
28 Frequency (CF_PILOT_INC_S = CF_PILOT_INC_T)
- 29 o Search window for pilots in the Neighbor Set on the CDMA Candidate
30 Frequency (CF_SRCH_WIN_N_S = CF_SRCH_WIN_N_T)
- 31 o Search window for pilots in the Remaining Set on the CDMA
32 Candidate Frequency (CF_SRCH_WIN_R_S = CF_SRCH_WIN_R_T)
- 33 o If PILOT_UPDATE is equal to '1', the mobile station shall set
34 CF_SEARCH_PRIORITY_INCL_S and CF_SRCH_WIN_NGHR_INCL_S to
35 the values corresponding to CF_NGHR_SRCH_MODE shown in
36 Table 6.6.6.2.5.1-1.
- 37 o If PILOT_UPDATE is equal to '1', the mobile station shall replace the
38 Candidate Frequency Neighbor Set with all neighbor pilots specified
39 in the *Candidate Frequency Search Request Message*.

- o If PILOT_UPDATE is equal to '1' and CF_SEARCH_PRIORITY_INCL_S is equal to '1', the mobile station shall store the search priority (SEARCH_PRIORITY_S = SEARCH_PRIORITY_T) associated with each of the neighboring base stations contained in the Candidate Frequency Neighbor Set.
- o If PILOT_UPDATE is equal to '1' and CF_SRCH_WIN_NGHBR_INCL_S is equal to '1', the mobile station shall store the neighbor pilot channel search window size (SRCH_WIN_NGHBR_S = SRCH_WIN_NGHBR_T) associated with each of the neighboring base stations contained in the Candidate Frequency Neighbor Set.
- o If PILOT_UPDATE is equal to '1', the mobile station shall replace the Candidate Frequency Search Set with all flagged pilots (those with the corresponding SEARCH_SET field set to '1') specified in the *Candidate Frequency Search Request Message*.
- + The mobile station shall store the following parameters from its current configuration:
 - o CDMA band class (SF_CDMABAND_S = CDMABAND_S)
 - o Frequency Assignment (SF_CDMACH_S = CDMACH_S)
 - o Pilot detection threshold (SF_T_ADD_S = T_ADD_S)
- + If SEARCH_TYPE_T is equal to '01', the mobile station shall perform a single search of the Candidate Frequency Search Set, as described in 6.6.6.2.8.3.1. If SEARCH_TYPE_T is equal to '11', the mobile station shall perform the periodic search procedures, as described in 6.6.6.2.8.3.2.

Table 6.6.6.2.5.1-1. Search Parameter Settings

| NGHBR_SRCH_ MODE CF_NGHBR_ SRCH_MODE | SEARCH_ PRIORITY_INCL CF_SEARCH_ PRIORITY_INCL | SRCH_WIN_ NGHBR_INCL CF_SRCH_ WIN_NGHBR_INCL |
|---|---|---|
| 00 | 0 | 0 |
| 01 | 1 | 0 |
| 10 | 0 | 1 |
| 11 | 1 | 1 |

If SEARCH_MODE_T is equal to '0001', and if the mobile station supports analog searching, the mobile station shall process the *Candidate Frequency Search Request Message* as follows:

- The mobile station shall send a *Mobile Station Reject Order* with the ORDQ field set to '0001101' (search period too short), if SEARCH_TYPE_r is equal to '11' and search_period is less than $(\max(\text{fwd_time}, \text{rev_time}) + T_{71m})$ seconds where search_period , fwd_time and rev_time are defined below.

(In the following, rec_search_set is the set of analog frequencies specified in the *Candidate Frequency Search Request Message*.)

search_period = time period corresponding to SEARCH_PERIOD_r shown in Table 6.6.6.2.8.3.2-1

fwd_time = the mobile station's estimate of the total length of time, in seconds, for which the mobile station will need to suspend its current Forward Traffic Channel processing in order to tune to each analog frequency in rec_search_set and measure its strength, and to re-tune to the Serving Frequency; if the mobile station searches rec_search_set in multiple visits, fwd_time is the total time for all visits away from the Serving Frequency in a search period (see 6.6.6.2.10.2)

rev_time = the mobile station's estimate of the total length of time, in seconds, for which the mobile station will need to suspend its current Reverse Traffic Channel processing in order to tune to each analog frequency in rec_search_set and measure its strength, and to re-tune to the Serving Frequency; if the mobile station searches rec_search_set in multiple visits, rev_time is the total time for all visits away from the Serving Frequency in a search period

- If the mobile station does not send a *Mobile Station Reject Order* in response to the *Candidate Frequency Search Request Message*, it shall perform the following:
 - The mobile station shall send a *Candidate Frequency Search Response Message* as a message requiring an acknowledgment, within T_{56m} seconds of receiving the *Candidate Frequency Search Request Message*. The mobile station shall set the fields of the *Candidate Frequency Search Response Message* as follows:
 - + The mobile station shall set $\text{TOTAL_OFF_TIME_FWD}$ and $\text{TOTAL_OFF_TIME_REV}$ to its estimate of the total number of frames for which it will need to suspend its current Forward Traffic Channel processing and Reverse Traffic Channel processing, respectively, in order to tune to each analog frequency in rec_search_set , and to re-tune to the Serving Frequency (see 6.6.6.2.8.3.2). If the mobile station searches rec_search_set in multiple visits away from the Serving Frequency, the mobile station shall report the total number of frames in all visits in a search period for which it will need to suspend its current Forward Traffic Channel and the Reverse Traffic Channel processing.

- 1 + The mobile station shall set MAX_OFF_TIME_FWD and
2 MAX_OFF_TIME_REV to its estimate of the maximum number of frames
3 for which it will need to suspend its current Forward Traffic Channel
4 processing and Reverse Traffic Channel processing, respectively, during
5 any single visit away from the Serving Frequency, to search a subset of
6 rec_search_set, and to re-tune to the Serving Frequency.
- 7 - When the message takes effect, the mobile station shall perform the following
8 actions:
 - 9 + If any periodic search is in progress, the mobile station shall abort it (see
10 6.6.6.2.8.3.4 and 6.6.6.2.10.4).
 - 11 + If SEARCH_TYPE_r is equal to '00', the mobile station may stop
12 maintaining the average of the Serving Frequency received power that is
13 used in the handoff and search procedures.
 - 14 + If SEARCH_TYPE_r is equal to '01' or '11', and the mobile station uses
15 received power measurements in the search procedure, it should start
16 monitoring the received power on the Serving Frequency, if it is not
17 already doing so. While it is tuned to the Serving Frequency, the mobile
18 station should measure the received power once every frame (0.02
19 seconds), and should maintain an average of the received power over the
20 last N_{12m} frames.
 - 21 + Store the following parameters from the *Candidate Frequency Search*
22 *Request Message*:
 - 23 o *Candidate Frequency Search Request Message* sequence number
24 (CFSRM_SEQ_s = CFSRM_SEQ_r)
 - 25 o Periodic search flag: If SEARCH_TYPE_r is equal to '11', the mobile
26 station shall set PERIODIC_SEARCH_s to '1'; otherwise, the mobile
27 station shall set PERIODIC_SEARCH_s to '0'.
 - 28 o Search period for the analog frequencies search
29 (SEARCH_PERIOD_s = SEARCH_PERIOD_r)
 - 30 o Candidate Frequency search mode
31 (SEARCH_MODE_s = SEARCH_MODE_r)
 - 32 o Band class for the analog frequencies
33 (CF_CDMABAND_s = BAND_CLASS_r)
 - 34 o Serving Frequency total pilot E_c threshold
35 (SF_TOTAL_EC_THRESH_s = SF_TOTAL_EC_THRESH_r)
 - 36 o Serving Frequency total pilot E_c/I₀ threshold
37 (SF_TOTAL_EC_IO_THRESH_s = SF_TOTAL_EC_IO_THRESH_r)

- o Candidate Frequency Analog Search Set: The mobile station shall replace the Candidate Frequency Analog Search Set with the analog frequencies included in the *Candidate Frequency Search Request Message*.
- + If SEARCH_TYPE_r is equal to '01', the mobile station shall perform a single search of the Candidate Frequency Analog Search Set as described in 6.6.6.2.10.1. If SEARCH_TYPE_r is equal to '11', the mobile station shall perform the periodic search procedures described in 6.6.6.2.10.2.

6. *Candidate Frequency Search Control Message*: The mobile station shall process the message as follows:

The mobile station shall send a *Mobile Station Reject Order* with the ORDQ field set to '00000110' (capability not supported) if P_REV_IN_USE_s is less than or equal to four and the mobile station does not support mobile-assisted hard handoff; otherwise, the mobile station shall perform the actions described in the remainder of this section to process the *Candidate Frequency Search Control Message*.

If SEARCH_MODE_s is equal to '0000':

- The mobile station shall send a *Mobile Station Reject Order* with the ORDQ field set to '00001010' (search set not specified), if SEARCH_TYPE_r is not equal to '00' and the Candidate Frequency Search Set is empty.
- The mobile station shall send a *Mobile Station Reject Order* with the ORDQ field set to '00001011' (invalid search request), if SEARCH_TYPE_r is not equal to '00' and the Candidate Frequency is the same as the Serving Frequency (CF_CDMABAND_s is equal to CDMABAND_s and CF_CDMACH_s is equal to CDMACH_s).
- The mobile station shall send a *Mobile Station Reject Order* with the ORDQ field set to '0001101' (search period too short), if SEARCH_TYPE_r is equal to '11' and *search_period* is less than $(\max(\text{fwd_time}, \text{rev_time}) + T_{71m})$ seconds, where
 $\text{search_period} = \text{time period corresponding to SEARCH_PERIOD}_r \text{ shown in Table 6.6.6.2.8.3.2-1,}$

$\text{fwd_time} =$ the mobile station's estimate of the total length of time, in seconds, for which the mobile station will need to suspend its current Forward Traffic Channel processing in order to tune to the Candidate Frequency, to search the Candidate Frequency Search Set and to re-tune to the Serving Frequency; if the mobile station searches the Candidate Frequency Search Set in multiple visits, fwd_time is the total time for all visits to the Candidate Frequency in a search period (see 6.6.6.2.8.3.2),
 and

1 *rev_time* = the mobile station's estimate of the total length of time, in
 2 seconds, for which the mobile station will need to suspend its
 3 current Reverse Traffic Channel processing in order to tune to
 4 the Candidate Frequency, to search the Candidate Frequency
 5 Search Set and to re-tune to the Serving Frequency; if the
 6 mobile station searches the Candidate Frequency Search Set in
 7 multiple visits, *rev_time* is the total time for all visits to the
 8 Candidate Frequency in a search period.

- 9 • If the mobile station does not reject the *Candidate Frequency Search Control*
 10 *Message*, it shall perform the following actions when the message takes effect:
 - 11 - If any periodic search is in progress, the mobile station shall abort it (see
 12 6.6.6.2.8.3.4 and 6.6.6.2.10.4).
 - 13 - If *SEARCH_TYPE_r* is equal to '00':
 - 14 + The mobile station shall set *PERIODIC_SEARCH_s* to '0'.
 - 15 + The mobile station may stop maintaining the average of the Serving
 16 Frequency received power that is used in the handoff and search
 17 procedures.
 - 18 - If *SEARCH_TYPE_r* is equal to '01' or '11', the mobile station shall store the
 19 following parameters from its current configuration:
 - 20 + CDMA band class (*SF_CDMABAND_s* = *CDMABAND_s*)
 - 21 + Frequency Assignment (*SF_CDMACH_s* = *CDMACH_s*)
 - 22 + Pilot detection threshold (*SF_T_ADD_s* = *T_ADD_s*)
 - 23 - If *SEARCH_TYPE_r* is equal to '01':
 - 24 + The mobile station shall set *PERIODIC_SEARCH_s* to '0'.
 - 25 + If mobile station uses received power measurements in the search
 26 procedure, it should start monitoring the received power on the Serving
 27 Frequency, if it is not already doing so. While it is tuned to the Serving
 28 Frequency, the mobile station should measure the received power once
 29 every frame (0.02 seconds), and should maintain an average of the
 30 received power over the last *N_{12m}* frames.
 - 31 + The mobile station shall perform a single search of the Candidate
 32 Frequency Search Set, as described in 6.6.6.2.8.3.1.
 - 33 - If *SEARCH_TYPE_r* is equal to '11':
 - 34 + The mobile station shall set *PERIODIC_SEARCH_s* to '1'.

- + If mobile station uses received power measurements in the search procedure, it should start monitoring the received power on the Serving Frequency, if it is not already doing so. While it is tuned to the Serving Frequency, the mobile station should measure the received power once every frame (0.02 seconds), and should maintain an average of the received power over the last N_{12m} frames.
- + The mobile station shall perform the periodic search procedures for the Candidate Frequency Search Set, as described in 6.6.6.2.8.3.2.

If $SEARCH_MODE_S$ is equal to '0001':

- The mobile station shall send a *Mobile Station Reject Order* with the $ORDQ$ field set to '00001010' (search set not specified), if $SEARCH_TYPE_r$ is not equal to '00' and the Candidate Frequency Analog Search Set is empty.
- The mobile station shall send a *Mobile Station Reject Order* with the $ORDQ$ field set to '0001101' (search period too short), if $SEARCH_TYPE_r$ is equal to '11' and $search_period$ is less than $(\max(fwd_time, rev_time) + T_{71m})$ seconds, where $search_period$ = time period corresponding to $SEARCH_PERIOD_r$ shown in Table 6.6.6.2.8.3.2-1,

fwd_time = the mobile station's estimate of the total length of time, in seconds, for which the mobile station will need to suspend its current Forward Traffic Channel processing in order to tune to each analog frequency in the Candidate Frequency Analog Search Set and measure its strength, and to re-tune to the Serving Frequency; if the mobile station searches the Candidate Frequency Analog Search Set in multiple visits, fwd_time is the total time for all visits away from the Serving Frequency in a search period (see 6.6.6.2.10.2),

and

rev_time = the mobile station's estimate of the total length of time, in seconds, for which the mobile station will need to suspend its current Reverse Traffic Channel processing in order to tune to each analog frequency in the Candidate Frequency Analog Search Set and measure its strength, and to re-tune to the Serving Frequency; if the mobile station searches the Candidate Frequency Analog Search Set in multiple visits, fwd_time is the total time for all visits away from the Serving Frequency in a search period (see 6.6.6.2.10.2).

- If the mobile station does not reject the *Candidate Frequency Search Control Message*, it shall perform the following actions when the message takes effect:
 - If any periodic search is in progress, the mobile station shall abort it (see 6.6.6.2.8.3.4 and 6.6.6.2.10.4).

- 1 - If SEARCH_TYPE_r is equal to '00':
 - 2 + The mobile station shall set PERIODIC_SEARCH_s to '0'.
 - 3 + The mobile station may stop maintaining the average of the Serving
 - 4 Frequency received power that is used in the handoff and search
 - 5 procedures.
 - 6 - If SEARCH_TYPE_r is equal to '01':
 - 7 + The mobile station shall set PERIODIC_SEARCH_s to '0'.
 - 8 + If mobile station uses received power measurements in the search
 - 9 procedure, it should start monitoring the received power on the Serving
 - 10 Frequency, if it is not already doing so. While it is tuned to the Serving
 - 11 Frequency, the mobile station should measure the received power once
 - 12 every frame (0.02 seconds), and should maintain an average of the
 - 13 received power over the last N_{12m} frames.
 - 14 + The mobile station shall perform a single search of the Candidate
 - 15 Frequency Analog Search Set, as described in 6.6.6.2.10.1.
 - 16 - If SEARCH_TYPE_r is equal to '11':
 - 17 + The mobile station shall set PERIODIC_SEARCH_s to '1'.
 - 18 + If mobile station uses received power measurements in the search
 - 19 procedure, it should start monitoring the received power on the Serving
 - 20 Frequency, if it is not already doing so. While it is tuned to the Serving
 - 21 Frequency, the mobile station should measure the received power once
 - 22 every frame (0.02 seconds), and should maintain an average of the
 - 23 received power over the last N_{12m} frames.
 - 24 + The mobile station shall perform the periodic search procedures for the
 - 25 Candidate Frequency Analog Search Set, as described in 6.6.6.2.10.2.
- 26 7. *Extended Neighbor List Update Message*: The mobile station shall update its
- 27 neighbor set as specified in 6.6.6.2.6.3 and perform the following:
- 28 • If NGHBR_SRCH_MODE_r is equal to '01' or '11', the mobile station shall store
 - 29 the search priority (SEARCH_PRIORITY_s = SEARCH_PRIORITY_r) associated with
 - 30 each of the neighboring base stations contained in the *Extended Neighbor List*
 - 31 *Updated Message* which are in the mobile's neighbor set.
 - 32 • If NGHBR_SRCH_MODE_r is equal to '10' or '11', the mobile station shall store
 - 33 the neighbor pilot channel search window size
 - 34 (SRCH_WIN_NGHBR_s = SRCH_WIN_NGHBR_r) associated with each of the
 - 35 neighboring base stations contained in the *Extended Neighbor List Updated*
 - 36 *Message* which are in the mobile's neighbor set.
 - 37 • The mobile station shall update the default search window size for its Neighbor
 - 38 Set (SRCH_WIN_N_s = SRCH_WIN_N_r).

- 1 • The mobile station shall set SEARCH_PRIORITY_INCL_s and
2 SRCH_WIN_NGHR_INCL_s to the value specified in Table 6.6.6.2.5.1-1
3 corresponding to NGHR_SRCH_MODE_r.
 - 4 • If USE_TIMING is equal to '1', the mobile station shall store the timing included
5 flag (TIMING_INCL) associated with each of the neighboring base stations
6 contained in the *Extended Neighbor List Update Message* which are in the mobile
7 station neighbor set; otherwise the mobile station shall set the timing included
8 flag (TIMING_INCL) associated with each of the neighboring base stations to '0'.
 - 9 • If USE_TIMING is equal to '1' and TIMING_INCL_r is equal to '1', the mobile
10 station shall store the neighbor transmit time offset (NGHR_TX_OFFSET =
11 NGHR_TX_OFFSET_r) associated with each of the neighboring base stations
12 contained in the *Extended Neighbor List Update Message* which are in the mobile
13 station neighbor set.
 - 14 • If USE_TIMING is equal to '1' and the TIMING_INCL is equal to '1', then the
15 mobile station shall perform the following:
 - 16 - If the GLOBAL_TIMING_INCL field is equal to '1', then the mobile station
17 shall store the neighbor transmit time duration (NGHR_TX_DURATION =
18 GLOBAL_TX_DURATION_r) and the neighbor transmit time duration
19 (NGHR_TX_PERIOD = GLOBAL_TX_PERIOD_r) contained in the *Extended*
20 *Neighbor List Update Message*.
 - 21 - If the GLOBAL_TIMING_INCL field is equal to '0', then the mobile station
22 shall store the neighbor transmit time duration (NGHR_TX_DURATION =
23 NGHR_TX_DURATION_r) and the neighbor transmit time duration
24 (NGHR_TX_PERIOD = NGHR_TX_PERIOD_r) associated with each of the
25 neighboring base stations contained in the *Extended Neighbor List Update*
26 *Message* which are in the mobile station neighbor set.
- 27 8. *Supplemental Channel Assignment Message*: The mobile station shall process this
28 message as follows:
- 29 The mobile station shall send a *Mobile Station Reject Order* with the ORDQ field set
30 to the specified value if any of the following conditions is true, and shall not perform
31 any other action described in this section for processing the *Supplemental Channel*
32 *Assignment Message*:
- 33 • The mobile station shall send a *Mobile Station Reject Order* with the ORDQ field
34 set to '00000110' (capability not supported), if the number of forward or reverse
35 Supplemental Code Channels specified in the *Supplemental Channel Assignment*
36 *Message* is greater than the maximum number of Supplemental Code Channels
37 supported by the mobile station.
 - 38 • The mobile station shall send a *Mobile Station Reject Order* with the ORDQ field
39 set to '00000011' (message structure not acceptable), if both
40 USE_REV_HDM_SEQ and EXPL_REV_START_TIME or both
41 USE_FOR_HDM_SEQ and EXPL_FOR_START_TIME specified in the
42 *Supplemental Channel Assignment Message* are set to '1'.

- The mobile station shall send a *Mobile Station Reject Order* with the ORDQ field set to '00000100' (message field not in valid range), if PILOT_PN specified in the *Supplemental Channel Assignment Message* is not in the Active Set and explicit start time is specified in the *Supplemental Channel Assignment Message*.

If none of the above conditions is true, the mobile station shall perform the following.

- The mobile station shall store the following parameters from the *Supplemental Channel Assignment Message*:
 - Use *General Handoff Direction Message* forward sequence number indicator ($USE_FOR_HDM_SEQ_S = USE_FOR_HDM_SEQ_T$)
 - If $USE_FOR_HDM_SEQ_T$ is equal to '1', then the mobile station shall store the following:
 - + The sequence number of the *General Handoff Direction Message* to which this messaged is linked for the Forward Supplemental Code Channel assignment ($FOR_LINKED_HDM_SEQ_S = FOR_LINKED_HDM_SEQ_T$)
 - + The forward Supplemental Code Channel assignment order ($SCAM_FOR_ORDER_S = \text{least significant bit of } FOR_SUP_CONFIG_T$)
 - + The forward duration assignment indicator ($SCAM_FOR_DURATION_MODE_S = USE_FOR_DURATION_T$).
 - Use *General Handoff Direction Message* reverse sequence number indicator ($USE_REV_HDM_SEQ_S = USE_REV_HDM_SEQ_T$)
 - If $USE_REV_HDM_SEQ_T$ is equal to '1', then the mobile station shall store the following:
 - + The sequence number of the *General Handoff Direction Message* to which this messaged is linked for the Reverse Supplemental Code Channel assignment ($REV_LINKED_HDM_SEQ_S = REV_LINKED_HDM_SEQ_T$)
 - + The reverse duration assignment indicator ($SCAM_REV_DURATION_MODE_S = USE_REV_DURATION_T$).
- If $USE_RETRY_DELAY_T$ is '0', then the mobile station shall store 0 as $RETRY_DELAY_S$. The mobile station may send subsequent *Supplemental Channel Request Messages* whenever $RETRY_DELAY_S$ is set to 0.
- If $USE_RETRY_DELAY_T$ is set to '1', the mobile station shall interpret the *Supplemental Channel Assignment Message* as an indication that the base station has specified a *Supplemental Channel Request Message* retry delay in $RETRY_DELAY_T$ as follows:
 - The mobile station shall store the next system time 80 ms boundary + $RETRY_DELAY_T \times 320$ ms as $RETRY_DELAY_S$. The mobile station shall not send any subsequent *Supplemental Channel Request Message* until after the system time stored in $RETRY_DELAY_S$. At the system time stored in $RETRY_DELAY_S$, the mobile station shall reset $RETRY_DELAY_S$ to 0.

- 1 - If RETRY_DELAY_r is '00000000', then the mobile station shall store 0 as
2 RETRY_DELAY_s . The mobile station may send subsequent *Supplemental*
3 *Channel Request Messages* whenever RETRY_DELAY_s is set to 0.
- 4 - If RETRY_DELAY_r is '11111111', then the mobile station shall store *infinity*
5 as RETRY_DELAY_s , and the mobile station shall not send any further
6 *Supplemental Channel Request Messages* until the mobile station receives a
7 new *Supplemental Channel Assignment Message* with no retry delay or a
8 non-infinite retry delay specified, or until the mobile station receives a
9 *General Handoff Direction Message* with a CLEAR_RETRY_DELAY indication
10 set.
- 11 • If REV_INCLUDED_r is equal to '1', then the mobile station shall process Reverse
12 Supplemental Code Channel assignment information for the *Supplemental*
13 *Channel Assignment Message*. This information shall be processed as follows:
 - 14 - The mobile station shall store USE_T_ADD_ABORT_r , the Reverse
15 Supplemental Code Channel assignment T_ADD abort indicator, as
16 USE_T_ADD_ABORT_s .
 - 17 - The mobile station shall store $\text{REV_DTX_DURATION}_r$, Reverse Supplemental
18 Channel Discontinuous Transmission Duration, as $\text{REV_DTX_DURATION}_s$.
 - 19 - If $\text{REV_PARMS_INCLUDED}_r$ is equal to '1', the mobile station shall store the
20 following:
 - 21 + $\text{T_MULCHAN}_s = \text{T_MULCHAN}_r$
 - 22 + $\text{BEGIN_PREAMBLE}_s = \text{BEGIN_PREAMBLE}_r$
 - 23 + $\text{RESUME_PREAMBLE}_s = \text{RESUME_PREAMBLE}_r$
 - 24 - If IGNORE_SCAM_s is equal to '1' and SCRM_SEQ_NUM_r is not present or is
25 present and is not equal to SCRM_SEQ_NUM_s , then the mobile station shall
26 not process the remaining Reverse Supplemental Code Channel assignment
27 information in this message.
 - 28 - If IGNORE_SCAM_s is equal to '1' and SCRM_SEQ_NUM_r is present and is
29 equal to SCRM_SEQ_NUM_s , then the mobile station shall set
30 IGNORE_SCAM_s to '0'.
 - 31 - The mobile station shall set REV_START_TIME_s as follows:
 - 32 + If $\text{EXPL_REV_START_TIME}_r$ is equal to '1', the mobile station shall set
33 the REV_START_TIME_s to REV_START_TIME_r .
 - 34 + If USE_REV_HDM_SEQ_r is equal to '1' and $\text{REV_LINKED_HDM_SEQ}_r$ is
35 not equal to HDM_SEQ_s , the mobile station shall set the
36 REV_START_TIME_s to NULL.
 - 37 + If USE_REV_HDM_SEQ_r is equal to '1', $\text{REV_LINKED_HDM_SEQ}_r$ is
38 equal to HDM_SEQ_s , then the mobile station shall set the
39 REV_START_TIME_s to the implicit action time of the *Supplemental*
40 *Channel Assignment Message*.

- 1 + If EXPL_REV_START_TIME_r is equal to '0' and USE_REV_HDM_SEQ_r is
2 equal to '0', the mobile station shall set the REV_START_TIME_s to the
3 next 80 ms boundary following the implicit action time of the
4 *Supplemental Channel Assignment Message*.
- 5 = The mobile station shall set NUM_REV_CODES_s to NUM_REV_CODES_r. If
6 REV_START_TIME_s is not equal to NULL, the mobile station shall perform
7 the following actions:
 - 8 + If NUM_REV_CODES_r is equal to '000', the mobile station shall stop
9 transmitting the Reverse Supplemental Code Channels at the start time
10 specified by REV_START_TIME_s.
 - 11 + If NUM_REV_CODES_r is not equal to '000', the mobile station may start
12 transmitting on NUM_REV_CODES_s Reverse Supplemental Code
13 Channels at the start time specified by REV_START_TIME_s for a duration
14 of time specified by the following rules:
 - 15 o If USE_REV_DURATION_r is equal to '1', the mobile station shall set
16 REV_DURATION_s to REV_DURATION_r. The mobile station may
17 continue transmitting on the Reverse Supplemental Code Channels
18 for a period of (REV_DURATION_s × 80) ms, or until it receives the
19 action time of a subsequent *General Handoff Direction Message* or a
20 *Supplemental Channel Assignment Message* that specifies a different
21 Reverse Supplemental assignment duration or start time.
 - 22 o If USE_REV_DURATION_r is equal to '0', the mobile station may
23 continue to transmit indefinitely on the Reverse Supplemental Code
24 Channels, or until it receives the action time of a subsequent *General*
25 *Handoff Direction Message* or a *Supplemental Channel Assignment*
26 *Message* that specifies a different Reverse Supplemental assignment
27 duration or start time.
- 28 • If FOR_INCLUDED is equal to '1', then the mobile station shall process Forward
29 Supplemental Code Channel assignment information as follows:
 - 30 - The mobile station shall assign a value to FOR_START_TIME_s according to
31 the following rules:
 - 32 + If EXPL_FOR_START_TIME is equal to '1', the mobile station shall set the
33 FOR_START_TIME_s to FOR_START_TIME_r.
 - 34 + If USE_FOR_HDM_SEQ_r is equal to '1' and FOR_LINKED_HDM_SEQ_r is
35 not equal to HDM_SEQ_s, the mobile station shall set the
36 FOR_START_TIME_s to NULL.
 - 37 + If USE_FOR_HDM_SEQ_r is equal to '1', FOR_LINKED_HDM_SEQ_r is
38 equal to HDM_SEQ_s, then the mobile station shall set the
39 FOR_START_TIME_s to the implicit action time of the *Supplemental*
40 *Channel Assignment Message*.

- 1 + If EXPL_FOR_START_TIME_r is equal to '0' and USE_FOR_HDM_SEQ_r
2 equals '0', the mobile station shall set the FOR_START_TIME_s to the
3 implicit action time of the *Supplemental Channel Assignment Message*.
- 4 - If FOR_SUP_CONFIG_r is equal to '00' and FOR_START_TIME_s is not equal to
5 NULL, the mobile station should stop processing the Forward Supplemental
6 Code Channels at the time specified by FOR_START_TIME_s.
- 7 - If FOR_SUP_CONFIG_r is equal to '01' and FOR_START_TIME_s is not equal to
8 NULL, the mobile station shall start processing the Forward Supplemental
9 Code Channels in the CODE_CHAN_LIST_s at FOR_START_TIME_s for a period
10 of time specified by the following rules:
 - 11 + If USE_FOR_DURATION is equal to '1', the mobile station shall set
12 FOR_DURATION_s to FOR_DURATION_r. The mobile station shall
13 continue processing the Forward Supplemental Code Channels for a
14 period of (FOR_DURATION_s × 80) ms, or until it receives the action time
15 of a subsequent *Supplemental Channel Assignment Message* or a *General*
16 *Handoff Direction Message* that specifies a different Forward
17 Supplemental assignment duration or start time.
 - 18 + If USE_FOR_DURATION_r is equal to '0', the mobile station shall continue
19 processing the Forward Supplemental Code Channels until it receives the
20 action time of a subsequent *Supplemental Channel Assignment Message*
21 or a *General Handoff Direction Message* that specifies a different Forward
22 Supplemental assignment duration or start time.
- 23 = If FOR_SUP_CONFIG_r is equal to '10', the mobile station shall perform the
24 following:
 - 25 + The mobile station shall update the CODE_CHAN_LIST_s as specified in
26 6.6.8.
 - 27 + If FOR_START_TIME_s is not equal to NULL the mobile station should
28 stop processing Forward Supplemental Code Channels at the time
29 specified by FOR_START_TIME_s.
- 30 - If FOR_SUP_CONFIG_r is equal to '11', the mobile station shall perform the
31 following:
 - 32 + The mobile station shall update the CODE_CHAN_LIST_s as specified in
33 6.6.8.
 - 34 + If FOR_START_TIME_s is not equal to NULL, then the mobile station shall
35 start processing the Forward Supplemental Code Channels in the
36 CODE_CHAN_LIST_s at the time specified by FOR_START_TIME_s for a
37 period of time specified by the following rules:

- o If $USE_FOR_DURATION_r$ is equal to '1', the mobile station shall set $FOR_DURATION_s$ to $FOR_DURATION_r$. The mobile station shall continue processing the Forward Supplemental Code Channels for $(FOR_DURATION_s \times 80)$ ms, until it receives a subsequent *Supplemental Channel Assignment Message* or a *General Handoff Direction Message* that specifies a different Forward Supplemental assignment duration or start time.
- o If $USE_FOR_DURATION_r$ is equal to '0', the mobile station shall continue processing the Forward Supplemental Code Channels until it receives a subsequent *Supplemental Channel Assignment Message* or a *General Handoff Direction Message* that specifies a different Forward Supplemental assignment duration or start time.

9. *General Handoff Direction Message*: The mobile station shall process the message as follows:

The mobile station shall send a *Mobile Station Reject Order* with the ORDQ field set to the specified value if any of the following conditions is true, and shall not perform any other action described in this section for processing the *General Handoff Direction Message*:

- The mobile station shall send a *Mobile Station Reject Order* with the ORDQ field set to '00000110' (capability not supported), if the mobile station does not support the band class specified in the *General Handoff Direction Message*.
- The mobile station shall send a *Mobile Station Reject Order* with the ORDQ field set to '00000110' (capability not supported), if the number of forward or reverse Supplemental Code Channels specified in the *General Handoff Direction Message* is greater than the maximum number of Supplemental Code Channels supported by the mobile station.
- The mobile station shall send a *Mobile Station Reject Order* with the ORDQ field set to '00000111' (message cannot be handled by the current mobile station configuration), if the mobile station does not support the service configuration specified in the *General Handoff Direction Message*.
- The mobile station shall send a *Mobile Station Reject Order* with the ORDQ field set to '00001010' (search set not specified), if the PERIODIC_SEARCH field is included in the *General Handoff Direction Message* and is set to '1', and the Candidate Frequency Search Set is empty.
- The mobile station shall send a *Mobile Station Reject Order* with the ORDQ field set to '00001101' (search period too short), if the PERIODIC_SEARCH field is included in the *General Handoff Direction Message* and is set to '1', and *search_period* is less than $(\max(\text{fwd_time}, \text{rev_time}) + T_{71m} \text{ seconds})$, where
search_period = time period corresponding to $SEARCH_PERIOD_s$ shown in Table 6.6.6.2.8.3.2-1,

fwd_time = the mobile station's estimate of the total length of time, in seconds, for which the mobile station will need to suspend its current Forward Traffic Channel processing in order to tune to the CDMA Candidate Frequency, to search the Candidate Frequency Search Set, and to re-tune to the Serving Frequency; if the mobile station searches the Candidate Frequency Search Set in multiple visits, *fwd_time* is the total time for all visits to the CDMA Candidate Frequency in a search period (see 6.6.6.2.8.3.2),

and

rev_time = the mobile station's estimate of the total length of time, in seconds, for which the mobile station will need to suspend its current Reverse Traffic Channel processing in order to tune to the CDMA Candidate Frequency, to search the Candidate Frequency Search Set, and to re-tune to the Serving Frequency; if the mobile station searches the Candidate Frequency Search Set in multiple visits, *rev_time* is the total time for all visits to the CDMA Candidate Frequency in a search period.

If none of the above conditions is true, the mobile station shall perform the actions described in the remainder of this section to process the *General Handoff Direction Message* at the action time of the message.

If EXTRA_PARMS is equal to '1', the mobile station shall store the return on failure indicator from the *General Handoff Direction Message* (RETURN_IF_HANDOFF_FAIL_S = RETURN_IF_HANDOFF_FAIL_T); otherwise the mobile station shall set RETURN_IF_HANDOFF_FAIL_S to '0'.

The mobile station shall set RETURN_IF_HANDOFF_FAIL_S to '0' (disable return on failure) if any of the following conditions is true:

- If P_REV_IN_USE_S is less than or equal to four and the mobile station does not support hard handoff with return on failure, or
- At least one of the pilots specified by the message is also included in the Active Set prior to the action time of the message, and one of the following conditions is true:
 - EXTRA_PARMS is equal to '0', or
 - EXTRA_PARMS is equal to '1', the message specifies the same frequency assignment as the Serving Frequency (BAND_CLASS_T is equal to CDMABAND_S and CDMA_FREQ_T is equal to CDMACH_S), and FRAME_OFFSET_T is equal to FRAME_OFFSET_S.

The mobile station shall store the following parameters from its current configuration:

- CDMA band class (SF_CDMABAND_S = CDMABAND_S)
- Frequency assignment (SF_CDMACH_S = CDMACH_S)

- Frame Offset ($SF_FRAME_OFFSET_S = FRAME_OFFSET_S$)

If $RETURN_IF_HANDOFF_FAIL_S$ is equal to '1', the mobile station shall also store the following parameters from its current configuration:

- Protocol revision level
($SF_P_REV_S = P_REV_S$)
- Protocol revision level in use on the Serving Frequency
($SF_P_REV_IN_USE_S = P_REV_IN_USE_S$)
- Search window size for the Active Set and Candidate Set
($SF_SRCH_WIN_A_S = SRCH_WIN_A_S$)
- Search window size for the Neighbor Set
($SF_SRCH_WIN_N_S = SRCH_WIN_N_S$)
- Search window size for the Remainder Set
($SF_SRCH_WIN_R_S = SRCH_WIN_R_S$)
- Pilot detection threshold
($SF_T_ADD_S = T_ADD_S$)
- Pilot drop threshold
($SF_T_DROP_S = T_DROP_S$)
- Active Set versus Candidate Set comparison threshold
($SF_T_COMP_S = T_COMP_S$)
- Drop timer value
($SF_T_TDROP_S = T_TDROP_S$)
- Soft slope for the dynamic add and drop thresholds
($SF_SOFT_SLOPE_S = SOFT_SLOPE_S$)
- Intercept for the dynamic add threshold
($SF_ADD_INTERCEPT_S = ADD_INTERCEPT_S$)
- Intercept for the dynamic drop threshold
($SF_DROP_INTERCEPT_S = DROP_INTERCEPT_S$)
- Private long code mask indicator: If the mobile station is using the private long code mask on the Serving Frequency, it shall set $SF_PRIVATE_LCM_S$ to '1'; otherwise, it shall set $SF_PRIVATE_LCM_S$ to '0'.
- Service negotiation type
($SF_SERV_NEG_S = SERV_NEG_S$)
- Service configuration record:
Store the current service configuration in $SF_SERVICE_CONFIG_S$
- Message encryption mode: If message encryption is on, the mobile station shall set $SF_ENCRYPT_MODE_S$ to '1'; otherwise, the mobile station shall set $SF_ENCRYPT_MODE_S$ to '0'.

- 1 • Extended nominal power setting of the current cell
2 (SF_NOM_PWR_EXT_S = NOM_PWR_EXT_S)
- 3 • Nominal power setting of the current cell
4 (SF_NOM_PWR_S = NOM_PWR_S)
- 5 • Power control step
6 SF_PWR_CNTL_STEP_S = PWR_CNTL_STEP_S)
- 7 • Serving Frequency Active Set (SF Active Set = (For each pilot in the current
8 Active Set: (PILOT_PN, PWR_COMB_IND)))
- 9 • Serving Frequency Code Channel List
10 (SF_CODE_CHAN_LIST_S = CODE_CHAN_LIST_S)

11 When the message takes effect, the mobile station shall perform the following
12 actions:

- 13 • Update the Active Set, Candidate Set, and Neighbor Set in accordance with the
14 *General Handoff Direction Message* processing (see 6.6.6.2.6.1, 6.6.6.2.6.2, and
15 6.6.6.2.6.3).
- 16 • Discontinue use of all Forward Traffic Channels associated with pilots not listed
17 in the *General Handoff Direction Message*.
- 18 • If EXTRA_PARMS is equal to '1', perform the following actions:
 - 19 - If FRAME_OFFSET_r is not equal to FRAME_OFFSET_S, change the frame
20 offset on all of the code channels of the Forward Traffic Channel and of the
21 Reverse Traffic Channel.
 - 22 - If RESET_L2_r is equal to '1', and RETURN_IF_HANDOFF_FAIL_S is equal to '0',
23 reset the acknowledgment procedures, as specified in 6.6.4.1.3.3. The
24 mobile station shall reset the acknowledgment procedures immediately after
25 the action time of the *General Handoff Direction Message*.
 - 26 - If RESET_FPC_r is equal to '1' and RETURN_IF_HANDOFF_FAIL_S is equal to
27 '0', initialize the Forward Traffic Channel power control counters, as
28 specified in 6.6.4.1.1.1.
 - 29 - If SERV_NEG_TYPE_r is equal to '1', set SERV_NEG_S to enabled; otherwise set
30 SERV_NEG_S to disabled. For operation in Band Class 1, SERV_NEG_S is
31 always equal to enabled.
 - 32 - Use the long code mask specified by the PRIVATE_LCM_r (see 6.3.12.3) and
33 indicate to the user the voice privacy mode status.
 - 34 - Process the ENCRYPT_MODE field, as specified in 6.3.12.2.
- 35 • If EXTRA_PARMS is equal to '0', set the following variables to the values
36 indicated:
 - 37 - Hard handoff traffic channel preamble count required before transmitting a
38 *Handoff Completion Message* (NUM_PREAMBLE_S = '000')
 - 39 - Complete search flag (COMPLETE_SEARCH_S = '1')

- 1 - CDMA band class for the Target Frequency
2 (TF_CDMABAND_S = SF_CDMABAND_S)
- 3 - Frequency assignment for the Target Frequency
4 (TF_CDMACH_S = SF_CDMACH_S)
- 5 • Store the following parameters from the *General Handoff Direction Message*:
 - 6 - *General Handoff Direction Message* sequence number
7 (HDM_SEQ_S = HDM_SEQ_T)
 - 8 - If SEARCH_INCLUDED is equal to '1', store the following:
 - 9 + Search window size for the Active Set and Candidate Set
10 (SRCH_WIN_A_S = SRCH_WIN_A_T)
 - 11 + Pilot detection threshold
12 (T_ADD_S = T_ADD_T)
 - 13 + Pilot drop threshold
14 (T_DROP_S = T_DROP_T)
 - 15 + Active Set versus Candidate Set comparison threshold
16 (T_COMP_S = T_COMP_T)
 - 17 + Drop timer value
18 (T_TDROPS = T_TDROPT)
 - 19 + Soft slope for the dynamic add and drop thresholds
20 (SOFT_SLOPE_S = SOFT_SLOPE_T)
 - 21 + Intercept for the dynamic add threshold
22 (ADD_INTERCEPT_S = ADD_INTERCEPT_T)
 - 23 + Intercept for the dynamic drop threshold
24 (DROP_INTERCEPT_S = DROP_INTERCEPT_T)
 - 25 - If EXTRA_PARMS is equal to '1', store the following:
 - 26 + Protocol revision level (P_REV_S = P_REV_T), and protocol revision level
27 currently in use (P_REV_IN_USE_S = min (P_REV_S, MOB_P_REV_P of the
28 current band class))
 - 29 + If the mobile station supports packet data service options, the packet
30 data services zone identifier (PACKET_ZONE_ID_S = PACKET_ZONE_ID_T)
 - 31 + Frame offset (FRAME_OFFSET_S = FRAME_OFFSET_T)
 - 32 + Acknowledgment procedures reset indicator
33 (If RETURN_IF_HANDOFF_FAIL_S is equal to '1', set TF_RESET_L2_S to
34 RESET_L2_T)
 - 35 + Indicator to initialize the Forward Traffic Channel power control counters
36 (If RETURN_IF_HANDOFF_FAIL_S is equal to '1', set TF_RESET_FPC_S to
37 RESET_FPC_T)
 - 38 + Nominal power setting of the target cell (NOM_PWR_S = NOM_PWR_T)

- 1 + Extended nominal power setting of the target cell (If CDMABAND_S =
2 '00001', then NOM_PWR_EXT_S = NOM_PWR_EXT_T; otherwise,
3 NOM_PWR_EXT_S = '0')
- 4 + Hard handoff traffic channel preamble count required before transmitting
5 a *Handoff Completion Message* (NUM_PREAMBLE_S = NUM_PREAMBLE_T)
- 6 + CDMA band class for the Target Frequency
7 (TF_CDMABAND_S = BAND_CLASS_T and CDMABAND_S = BAND_CLASS_T)
- 8 + Frequency assignment for the Target Frequency
9 (TF_CDMACH_S = CDMA_FREQ_T and CDMACH_S = CDMA_FREQ_T)
- 10 + Complete search flag (COMPLETE_SEARCH_S = COMPLETE_SEARCH_T)
- 11 + Periodic search flag (PERIODIC_SEARCH_S = PERIODIC_SEARCH_T)
- 12 - If REV_PARMS_INCLUDED is included and is equal to '1', the mobile station
13 shall store the following:
 - 14 + Reverse Supplemental Code Channel Request Message neighbor channel
15 pilot strength offset (T_MULCHAN_S = T_MULCHAN_T)
 - 16 + Reverse Supplemental Code Channel beginning of transmission preamble
17 length (BEGIN_PREAMBLE_S = BEGIN_PREAMBLE_T)
 - 18 + Reverse Supplemental Code Channel resumption of transmission
19 preamble length (RESUME_PREAMBLE_S = RESUME_PREAMBLE_T)
- 20 - For each pilot included in the message, the mobile station shall store the
21 following:
 - 22 + PILOT_PN, the pilot PN sequence offset index
 - 23 + PWR_COMB_IND, the power control symbol combining indicator
- 24 - If USE_PWR_CNTL_STEP is equal to '1' and PWR_CNTL_STEP_T corresponds
25 to a power control step size supported by the mobile station (see 6.1.2.3.2),
26 then the mobile station shall set PWR_CNTL_STEP_S to PWR_CNTL_STEP_T.
- 27 • Set the pilot detection threshold for the Target Frequency and the Candidate
28 Frequency:
 - 29 - Set TF_T_ADD_S to T_ADD_S.
 - 30 - If the Target Frequency is the same as the Candidate Frequency
31 (TF_CDMABAND_S is equal to CF_CDMABAND_S and TF_CDMACH_S is equal to
32 CF_CDMACH_S), set CF_T_ADD_S to T_ADD_S.
- 33 • If FOR_INCLUDED is included and is equal to '0', the mobile station shall
34 perform the following:
 - 35 - The mobile station shall update the Code Channel List, CODE_CHAN_LIST_S,
36 as specified in 6.6.8.

- 1 - If $USE_FOR_HDM_SEQ_S$ is equal to '1' and $FOR_LINKED_HDM_SEQ_S$ is
2 equal to HDM_SEQ_R (this indicates that there is pending Forward
3 Supplemental Code Channel assignment information, received in a
4 *Supplemental Channel Assignment Message*, linked to this *General Handoff*
5 *Direction Message*), then the mobile station shall perform the following
6 actions:
 - 7 + The mobile station shall set $USE_FOR_HDM_SEQ_S$ to '0'.
 - 8 + If $SCAM_FOR_ORDER_S$ is equal to '0', the mobile station shall stop
9 processing all Forward Supplemental Code Channels at the action time
10 of the *General Handoff Direction Message*.
 - 11 + If $SCAM_FOR_ORDER_S$ is equal to '1', the mobile station shall start
12 processing the Forward Supplemental Code Channels specified in
13 $CODE_CHAN_LIST_S$ at the action time of the *General Handoff Direction*
14 *Message*, for a period of time determined by the following rules:
 - 15 o If $SCAM_FOR_DURATION_MODE_S$ is equal to '1', the mobile station
16 shall continue processing the Forward Supplemental Code Channels
17 for a period of $(FOR_DURATION_S \times 80)$ ms, until it receives a
18 subsequent *General Handoff Direction Message* or a *Supplemental*
19 *Channel Assignment Message* that specifies a different Forward
20 Supplemental Code Channel assignment.
 - 21 o If $SCAM_FOR_DURATION_MODE_S$ is equal to '0', the mobile station
22 shall continue processing the Forward Supplemental Code Channels
23 until it receives a subsequent *Supplemental Channel Assignment*
24 *Message* or a *General Handoff Direction Message* that specifies a
25 different Forward Supplemental Code Channel assignment.
 - 26 - If $USE_FOR_HDM_SEQ_S$ is equal to '0' or $FOR_LINKED_HDM_SEQ_S$ is not
27 equal to HDM_SEQ_R , and if the mobile station is currently processing
28 Forward Supplemental Code Channels, it shall continue processing the
29 Forward Supplemental Code Channels using the updated Code Channel List,
30 $CODE_CHAN_LIST_S$.
- 31 • If $FOR_INCLUDED$ is included and is equal to '1', then the mobile station shall
32 process the Forward Supplemental Code Channel assignment information as
33 follows:
 - 34 - The mobile station shall set $USE_FOR_HDM_SEQ_S$ to '0'.
 - 35 - If $FOR_START_TIME_S$ specifies a time which is after the action time of the
36 *General Handoff Direction Message*, the mobile station shall cancel any
37 pending Forward Supplemental Code Channel assignment and shall set
38 $FOR_START_TIME_S$ to NULL.
 - 39 - The mobile station shall update the Code Channel List, $CODE_CHAN_LIST_S$,
40 in accordance with the value of FOR_SUP_CONFIG , as specified in 6.6.8.

- 1 - If FOR_SUP_CONFIG is equal to '00' or '10', the mobile station should stop
2 processing Forward Supplemental Code Channels, if any, when the message
3 takes effect.
- 4 - If FOR_SUP_CONFIG is equal to '01', the mobile station shall start
5 processing the Forward Supplemental Code Channels in the updated Code
6 Channel List, CODE_CHAN_LIST_s, at the action time of the message, for a
7 period of time determined by the following rules:
 - 8 + If USE_FOR_DURATION is equal to '1', the mobile station shall set
9 FOR_DURATION_s to FOR_DURATION_r. The mobile station shall
10 continue processing the Forward Supplemental Code Channels for a
11 period of (FOR_DURATION_s × 80) ms, until it receives a subsequent
12 *Supplemental Channel Assignment Message* or a *General Handoff*
13 *Direction Message* that specifies a different Forward Supplemental Code
14 Channel assignment.
 - 15 + If USE_FOR_DURATION is equal to '0', the mobile station shall continue
16 processing the Forward Supplemental Code Channels until it receives a
17 subsequent *Supplemental Channel Assignment Message* or a *General*
18 *Handoff Direction Message* that specifies a different Forward
19 Supplemental Code Channel assignment.
- 20 - If FOR_SUP_CONFIG is equal to '11', the mobile station shall start
21 processing the Forward Supplemental Code Channels in the updated Code
22 Channel List, CODE_CHAN_LIST_s, at the action time of the message, for a
23 period of time determined by the following rules:
 - 24 + If USE_FOR_DURATION is equal to '1', the mobile station shall set
25 FOR_DURATION_s to FOR_DURATION_r. The mobile station shall
26 continue processing the Forward Supplemental Code Channels for a
27 period of (FOR_DURATION_s × 80) ms, until it receives a subsequent
28 *Supplemental Channel Assignment Message* or a *General Handoff*
29 *Direction Message* that specifies a different Forward Supplemental Code
30 Channel assignment.
 - 31 + If USE_FOR_DURATION is equal to '0', the mobile station shall continue
32 processing the Forward Supplemental Code Channels until it receives a
33 subsequent *Supplemental Channel Assignment Message* or a *General*
34 *Handoff Direction Message* that specifies a different Forward
35 Supplemental Code Channel assignment.
- 36 • If REV_INCLUDED is included and is equal to '0', the mobile station shall
37 perform the following:
 - 38 - If USE_REV_HDM_SEQ_s is equal to '1' and REV_LINKED_HDM_SEQ_s is
39 equal to HDM_SEQ_r (this indicates that there is pending Reverse
40 Supplemental Code Channel assignment information, received in a
41 *Supplemental Channel Assignment Message*, linked to this *General Handoff*
42 *Direction Message*), the mobile station shall perform the following actions:

- 1 + If NUM_REV_CODES_s is equal to '000', the mobile station shall stop
- 2 transmitting on all Reverse Supplemental Code Channels at the action
- 3 time of the message.
- 4 + If NUM_REV_CODES_s is not equal to '000', the mobile station may start
- 5 transmitting on NUM_REV_CODES_s Reverse Supplemental Code
- 6 Channels at the action time of the message, for a duration of time
- 7 determined by the following rules:
 - 8 o If SCAM_REV_DURATION_MODE_s is equal to '1', the mobile station
 - 9 may continue transmitting on the Reverse Supplemental Code
 - 10 Channels for a period of (REV_DURATION_s × 80) ms, until it receives
 - 11 a subsequent *General Handoff Direction Message* or a *Supplemental*
 - 12 *Channel Assignment Message* that specifies a different Reverse
 - 13 Supplemental Code Channel assignment.
 - 14 o If SCAM_REV_DURATION_MODE_s is equal to '0', the mobile station
 - 15 may continue transmitting on the Reverse Supplemental Code
 - 16 Channels until it receives a subsequent *General Handoff Direction*
 - 17 *Message* or a *Supplemental Channel Assignment Message* that
 - 18 specifies a different Reverse Supplemental Code Channel assignment.
- 19 + The mobile station shall set USE_REV_HDM_SEQ_s to '0'.
 - 20 - If USE_REV_HDM_SEQ_s is equal to '0' or REV_LINKED_HDM_SEQ_s is not
 - 21 equal to HDM_SEQ_r, and if the previous Reverse Supplemental Code
 - 22 Channel assignment is still valid, the mobile station may continue to
 - 23 transmit on the Reverse Supplemental Code Channels according to the
 - 24 previously specified Reverse Supplemental Code Channel assignment.
- 25 • If REV_INCLUDED is included and is equal to '1', then the mobile station shall
- 26 process the Reverse Supplemental Code Channel assignment information as
- 27 follows:
 - 28 - The mobile station shall set REV_DTX_DURATION_s to
 - 29 REV_DTX_DURATION_r.
 - 30 - The mobile station shall set USE_REV_HDM_SEQ_s to '0'.
 - 31 - If REV_START_TIME_s specifies a time which is after the action time of the
 - 32 *General Handoff Direction Message*, the mobile station shall cancel any
 - 33 pending Reverse Supplemental Code Channel assignment and shall set
 - 34 REV_START_TIME_s to NULL.
 - 35 - If CLEAR_RETRY_DELAY is equal to '1', the mobile station shall cancel any
 - 36 previously indicated retry delay and shall set RETRY_DELAY_s to 0;
 - 37 otherwise, the mobile station shall continue to honor any previously active
 - 38 retry delay stored in RETRY_DELAY_s.
 - 39 - The mobile station shall set NUM_REV_CODES_s to NUM_REV_CODES_r, and
 - 40 shall perform the following actions:

- 1 + If NUM_REV_CODES_S is equal to '000', the mobile station shall stop
- 2 transmitting on all Reverse Supplemental Code Channels at the action
- 3 time of the message.
- 4 + If NUM_REV_CODES_S is not equal to '000', the mobile station may start
- 5 transmitting on NUM_REV_CODES_S Reverse Supplemental Code
- 6 Channels at the action time of the message, for a duration of time
- 7 determined by the following rules:
- 8 o If USE_REV_DURATION_r is equal to '1', the mobile station shall set
- 9 REV_DURATION_S to REV_DURATION_r. The mobile station may
- 10 continue transmitting on the Reverse Supplemental Code Channels
- 11 for a period of (REV_DURATION_S × 80) ms, until it receives a
- 12 subsequent *General Handoff Direction Message* or a *Supplemental*
- 13 *Channel Assignment Message* that specifies a different Reverse
- 14 Supplemental Code Channel assignment.
- 15 o If USE_REV_DURATION is equal to '0', the mobile station may
- 16 continue to transmit on the Reverse Supplemental Code Channels
- 17 until it receives a subsequent *General Handoff Direction Message* or a
- 18 *Supplemental Channel Assignment Message* that specifies a different
- 19 Reverse Supplemental Code Channel assignment.
- 20 - The mobile station shall store USE_T_ADD_ABORT_r, the Reverse
- 21 Supplemental Code Channel assignment T_ADD abort indicator, as
- 22 USE_T_ADD_ABORT_S.
- 23 - The mobile station shall set IGNORE_SCAM_S to '0'.
- 24 • If PERIODIC_SEARCH_S is equal to '0' and a periodic search is in progress, the
- 25 mobile station shall abort the periodic search (see 6.6.6.2.8.3.4 and
- 26 6.6.6.2.10.4).
- 27 • Perform a soft or hard handoff depending upon the following conditions:
- 28 - If EXTRA_PARMS is set to '1' and BAND_CLASS_r is not equal to
- 29 SF_CDMABAND_S, CDMA_FREQ_r is not equal to SF_CDMACH_S, or
- 30 FRAME_OFFSET_r is not equal to SF_FRAME_OFFSET_S; or if the set of pilots
- 31 specified by the message is disjoint from the Active Set prior to the action
- 32 time of the message, the mobile station shall do the following:
- 33 + If a Periodic Serving Frequency Pilot Report Procedure is in progress,
- 34 abort the procedure (see 6.6.6.2.12).
- 35 + If a Candidate Frequency periodic search is in progress, the mobile
- 36 station shall abort the periodic search (see 6.6.6.2.8.3.4 and
- 37 6.6.6.2.10.4).
- 38 + If RETURN_IF_HANDOFF_FAIL_S is equal to '0', the mobile station shall
- 39 perform actions specified in 6.6.6.2.8.1. If the message specifies more
- 40 than one pilot, the mobile station shall also perform actions specified in
- 41 6.6.6.2.7.1 and 6.6.6.2.7.2.

- + If RETURN_IF_HANDOFF_FAIL_s is equal to '1', the mobile station shall perform actions specified in 6.6.6.2.8.2. If the message specifies more than one pilot, the mobile station shall also perform actions specified in 6.6.6.2.7.1 and 6.6.6.2.7.2.

- Otherwise, the mobile station shall perform the actions specified in 6.6.6.2.7.

10. *Periodic Pilot Measurement Request Order*: The mobile station shall perform the following:

- If the PPSMM timer is enabled, disable it.
- If ORDQ is equal to '1111111', the mobile station shall send a *Periodic Pilot Strength Measurement Message* to the base station within T_{56m} seconds.
- If ORDQ is not equal to '1111111', the mobile station shall perform the following:
 - Set the MIN_PILOT_PWR_THRESH_s to MIN_PILOT_PWR_THRESH_r received from the *Periodic Pilot Strength Measurement Request Order*.
 - Set the MIN_PILOT_EC_IO_THRESH_s to MIN_PILOT_EC_IO_THRESH_r received from the *Periodic Pilot Strength Measurement Request Order*.
 - Set PPSMM_PERIOD_s equal to the larger value of ORDQ and the total length of time, in units of 80 ms, required by the mobile station to update the pilot strength measurement of each pilot in the Active Set and the Candidate Set.
 - Perform the Periodic Serving Frequency Pilot Report Procedure as specified in 6.6.6.2.12.

6.6.6.2.5.2 Processing of Reverse Traffic Channel Handoff Messages

The mobile station sends the following messages on the Reverse Traffic Channel in support of handoff when its transmitter is enabled and following the receipt of the first *Base Station Acknowledgment Order* on the Forward Traffic Channel:

1. *Pilot Strength Measurement Message*: The mobile station shall send an autonomous *Pilot Strength Measurement Message* as a message requiring an acknowledgment and containing measurements consistent with the event whenever any of the following events occur:

- P_REV_IN_USE_s is less than or equal to three or SOFT_SLOPE_s is equal to '000000' and the strength of a Neighbor Set or Remaining Set pilot is found to be above T_ADD_s.
- P_REV_IN_USE_s is greater than three, SOFT_SLOPE_s is not equal to '000000', and the strength PS, as specified in 6.6.6.2.2, of any Candidate Set pilot is found to satisfy the following inequality:

$$10 \times \log_{10} PS > \frac{\text{SOFT_SLOPE}_s}{8} \times 10 \times \log_{10} \sum_{i \in A} PS_i + \frac{\text{ADD_INTERCEPT}_s}{2}$$

where the summation is performed over all pilots currently in the Active Set and a *Pilot Strength Measurement Message* carrying this information has not been sent since the last *Extended Handoff Direction Message* or *General Handoff Direction Message* was received.

- $P_REV_IN_USE_s$ is greater than three, $SOFT_SLOPE_s$ is not equal to '000000', and the strength PS , as specified in 6.6.6.2.2, of any Neighbor Set or Remaining Set pilot is found to satisfy the following inequality:

$$10 \times \log_{10} PS > \max\left(\frac{SOFT_SLOPE_s}{8} \times 10 \times \log_{10} \sum_{i \in A} PS_i + \frac{ADD_INTERCEPT_s}{2}, \frac{T_ADD_s}{2}\right)$$

where the summation is performed over all pilots currently in the Active Set.

- The strength of a Candidate Set pilot exceeds the strength of an Active Set pilot by $T_COMP_s \times 0.5$ dB and a *Pilot Strength Measurement Message* carrying this information has not been sent since the last *Extended Handoff Direction Message* or *General Handoff Direction Message* was received.
- $P_REV_IN_USE_s$ is less than or equal to three or $SOFT_SLOPE_s$ is equal to '000000', the strength of a Candidate Set pilot exceeds the strength of an Active Set pilot by $T_COMP_s \times 0.5$ dB, and a *Pilot Strength Measurement Message* carrying this information has not been sent since the last *Extended Handoff Direction Message* or *Handoff Direction Message* was received.
- $P_REV_IN_USE_s$ is greater than three, $SOFT_SLOPE_s$ is not equal to '000000', and the strength of a Candidate Set pilot exceeds the strength of an Active Set pilot by $T_COMP_s \times 0.5$ dB and satisfies the following inequality:

$$10 \times \log_{10} PS > \frac{SOFT_SLOPE_s}{8} \times 10 \times \log_{10} \sum_{i \in A} PS_i + \frac{ADD_INTERCEPT_s}{2}$$

where the summation is performed over all pilots currently in the Active Set and a *Pilot Strength Measurement Message* carrying this information has not been sent since the last *Extended Handoff Direction Message* or *General Handoff Direction Message* was received.

- The handoff drop timer of an Active Set pilot has expired and a *Pilot Strength Measurement Message* carrying this information has not been sent since the last *Extended Handoff Direction Message* or *General Handoff Direction Message* was received.

2. *Handoff Completion Message*: The mobile station shall send a *Handoff Completion Message* as a message requiring acknowledgment as follows:

- If the handoff message (*Extended Handoff Direction Message* or *General Handoff Direction Message*) specifies a soft handoff, the mobile station shall send the *Handoff Completion Message* within T_{56m} seconds after the action time of the received handoff message.

- If the handoff message (*Extended Handoff Direction Message* or *General Handoff Direction Message*) specifies a hard handoff without return on failure (see 6.6.6.2.8.1), the mobile station shall send the *Handoff Completion Message* within T_{73m} seconds after the action time of the received handoff message.
- If the handoff message (*General Handoff Direction Message*) specifies a hard handoff with return on failure (see 6.6.6.2.8.2), the mobile station shall send the *Handoff Completion Message* within T_{56m} seconds after mobile station declares the handoff to be successful (see 6.6.6.2.8.2).

3. *Candidate Frequency Search Report Message*: The mobile station shall send a *Candidate Frequency Search Report Message* as a message requiring an acknowledgment whenever any of the following events occur:

- $RETURN_IF_HANDOFF_FAIL_S$ is equal to '1', and a handoff attempt is unsuccessful (see 6.6.6.2.8.2). In this case, the mobile station shall send a *Candidate Frequency Search Report Message* within T_{56m} seconds after completing a search of all pilots in the Candidate Frequency Search Set and resuming the use of the Serving Frequency Active Set (see 6.6.6.2.8.2.1).
- $RETURN_IF_HANDOFF_FAIL_S$ is equal to '1', an inter-frequency handoff attempt is unsuccessful (see 6.6.6.2.8.2), and $PERIODIC_SEARCH_S$ is equal to '1'. In this case, the mobile station shall send a *Candidate Frequency Search Report Message* in a search period if the conditions specified in 6.6.6.2.8.3.2 are met.
- The mobile station receives a *Candidate Frequency Search Request Message* or a *Candidate Frequency Search Control Message* with $SEARCH_TYPE$ set to '01'. If none of the conditions requiring the mobile station to send a *Mobile Station Reject Order* is true (see 6.6.6.2.5.1), the mobile station shall send a *Candidate Frequency Search Report Message*, as described in 6.6.6.2.8.3.1 and 6.6.6.2.10.1.
- The mobile station receives a *Candidate Frequency Search Request Message* or *Candidate Frequency Search Control Message* with $SEARCH_TYPE$ set to '11', $SEARCH_MODE_S$ is equal to '0000' and the Candidate Frequency Search Set is not empty. If none of the conditions requiring the mobile station to send a *Mobile Station Reject Order* is true (see 6.6.6.2.5.1), the mobile station shall send a *Candidate Frequency Search Report Message* in a search period if the conditions specified in 6.6.6.2.8.3.2 are met.
- The mobile station receives a *Candidate Frequency Search Request Message* or *Candidate Frequency Search Control Message* with $SEARCH_TYPE$ set to '11', $SEARCH_MODE_S$ is equal to '0001' and the Candidate Frequency Analog Search Set is not empty. If none of the conditions requiring the mobile station to send a *Mobile Station Reject Order* is true (see 6.6.6.2.5.1), the mobile station shall send a *Candidate Frequency Search Report Message* in a search period if the conditions specified in 6.6.6.2.10.2 are met.

4. *Periodic Pilot Strength Measurement Message*: The mobile station shall send a *Periodic Pilot Strength Measurement Message* to the base station as a message not requiring acknowledgment, as specified in 6.6.6.2.5.1 and 6.6.6.2.12.

6.6.6.2.6 Set Maintenance

6.6.6.2.6.1 Maintenance of the Active Set

The mobile station shall support a maximum Active Set size of N_{6m} pilots. The mobile station shall track the pilot strengths of all pilots in the Active Set.

When the mobile station is first assigned Forward Traffic Channels, the mobile station shall initialize the Active Set to contain the pilots associated with the assigned Forward Traffic Channels. When the mobile station processes an *Extended Handoff Direction Message* or a *General Handoff Direction Message* it shall replace the pilots in the Active Set with the pilots listed in the message.

6.6.6.2.6.2 Maintenance of the Candidate Set

The mobile station shall support a maximum Candidate Set size of N_{7m} pilots.

When the mobile station is first assigned a Forward Traffic Channel, the mobile station shall initialize the Candidate Set to contain no pilots. The mobile station shall adjust the Candidate Set whenever any of the following events occur:

- If the mobile station detects that the strength of a Neighbor Set pilot or a Remaining Set pilot exceeds T_ADD_S , the mobile station shall add the pilot to the Candidate Set.
- If the mobile station processes an *Extended Handoff Direction Message* or a *General Handoff Direction Message* which does not list a pilot in the current Active Set, and the handoff drop timer corresponding to that pilot has not expired, the mobile station shall add the pilot to the Candidate Set.
- If $P_REV_IN_USE_S$ is greater than three, and $SOFT_SLOPE_S$ is not equal to '000000', the mobile station shall perform the following: If the mobile station processes a *General Handoff Direction Message* which does not list a pilot in the current Active Set, the handoff drop timer corresponding to that pilot has expired, and that pilot is found to be above T_DROP_S , the mobile station shall add the pilot to the Candidate Set.
- If the mobile station processes an *Extended Handoff Direction Message* or a *General Handoff Direction Message* which lists a pilot in the current Candidate Set, the mobile station shall delete the pilot from the Candidate Set.
- If the handoff drop timer corresponding to a Candidate Set pilot expires, the mobile station shall delete the pilot from the Candidate Set.
- If the mobile station adds a pilot to the Candidate Set, and the resulting Candidate Set size exceeds N_{7m} , the mobile station shall delete from the Candidate Set the pilot whose handoff drop timer is closest to expiration. If more than one such pilot exists, the mobile station shall delete one such pilot that has the lowest strength. If no pilot in the Candidate Set has an enabled handoff drop timer, the mobile station shall delete from the Candidate Set the pilot that has the lowest strength.

6.6.6.2.6.3 Maintenance of the Neighbor Set

The mobile station shall support a Neighbor Set size of at least N_{8m} pilots.

When the mobile station is first assigned a Forward Traffic Channel, the mobile station shall initialize the Neighbor Set to contain all the pilots specified in the most recently received *Neighbor List Message*, *Extended Neighbor List Message* or *General Neighbor List Message*.

The mobile station shall maintain a counter, AGE_s , for each pilot in the Neighbor Set. The mobile station shall initialize this counter to zero when it moves the pilot from the Active Set or the Candidate Set to the Neighbor Set. The mobile station shall initialize this counter to $NGHBR_MAX_AGE_s$ when it moves the pilot from the Remaining Set to the Neighbor Set. The mobile station shall increment AGE_s for each pilot in the Neighbor Set upon receipt of a *Neighbor List Update Message* or an *Extended Neighbor List Update Message*. When the mobile station is first assigned to a Forward Traffic Channel, the mobile station shall set AGE_s for each pilot in the Neighbor Set to $NGHBR_MAX_AGE_s$.

The mobile station shall adjust the Neighbor Set whenever any of the following events occur:

- If the mobile station receives a *Neighbor List Update Message* or an *Extended Neighbor List Update Message*, it shall perform the following:
 - Increment AGE_s for each pilot in the Neighbor Set.
 - Delete from the Neighbor Set all pilots whose AGE_s exceeds $NGHBR_MAX_AGE_s$.
 - Add to the Neighbor Set each pilot named in the message, if it is not already a pilot of the Active Set, Candidate Set, or Neighbor Set. If the mobile station can store in the Neighbor Set only k additional pilots, and more than k new pilots were sent in the *Neighbor List Update Message*, or the *Extended Neighbor List Update Message* the mobile station shall store the first k new pilots listed in the message.
- If the handoff drop timer of a pilot in the Candidate Set expires, the mobile station shall add the pilot to the Neighbor Set.
- If $P_REV_IN_USE_s$ is less than or equal to three or $SOFT_SLOPE_s$ is equal to '000000', the mobile station shall perform the following: If the mobile station processes an *Extended Handoff Direction Message* or a *General Handoff Direction Message* in which a pilot in the Active Set is not listed, and the handoff drop timer corresponding to the pilot has expired, the mobile station shall add the pilot to the Neighbor Set.
- If $P_REV_IN_USE_s$ is greater than three, and $SOFT_SLOPE_s$ is not equal to '000000', the mobile station shall perform the following: If the mobile station processes an *Extended Handoff Direction Message* or a *General Handoff Direction Message* which does not list a pilot in the current Active Set, the handoff drop timer corresponding to that pilot has expired, and that pilot is found to be below T_DROP_s , the mobile station shall add the pilot to the Neighbor Set.

- 1 • If the mobile station adds a pilot to the Candidate Set, and the resulting Candidate
2 Set size exceeds the size supported by the mobile station, the mobile station shall
3 add the deleted Candidate Set pilot to the Neighbor Set (see 6.6.6.2.6.2).
- 4 • If the mobile station detects that the strength of a Neighbor Set pilot exceeds
5 T_ADD_S , the mobile station shall delete the pilot from the Neighbor Set.
- 6 • If the mobile station processes an *Extended Handoff Direction Message* or a *General*
7 *Handoff Direction Message* which lists a pilot in the current Neighbor Set, the mobile
8 station shall delete the pilot from the Neighbor Set.
- 9 • If the mobile station adds a pilot to the Neighbor Set, and the resulting Neighbor Set
10 size exceeds the size supported by the mobile station, the mobile station shall delete
11 from the Neighbor Set the pilot whose AGE_S is the largest. If more than one such
12 pilot exists, the mobile station shall delete one such pilot that has the lowest
13 strength.

14 6.6.6.2.7 Soft Handoff

15 6.6.6.2.7.1 Forward Traffic Channel Processing

16 All Forward Traffic Channels associated with pilots in the Active Set of the mobile station
17 carry identical modulation symbols with the exception of the power control subchannel (see
18 7.1.3.1.8 and 7.6.6.2.4.2).

19 When the Active Set contains more than one pilot, the mobile station should provide
20 diversity combining of the associated Forward Traffic Channels. The mobile station shall
21 provide for differential propagation delays from zero to at least 150 μs .

22 6.6.6.2.7.2 Reverse Traffic Channel Power Control During Soft Handoff

23 The *Extended Handoff Direction Message* or a *General Handoff Direction Message* identifies
24 sets of Forward Fundamental Code Channels that carry identical closed loop power control
25 subchannels. A set consists of one or more Forward Fundamental Code Channels with
26 identical power control information.

27 In each power control group containing valid power control bits (see 6.1.2.3.2), the mobile
28 station should provide diversity combining of the identical closed loop power control
29 subchannels and shall obtain at most one power control bit from each set of identical
30 closed loop power control subchannels. If the power control bits obtained from all sets are
31 equal to '0', the mobile station shall increase its power as specified in 6.1.2.3.2. If the
32 power control bit obtained from any set is equal to '1', the mobile station shall decrease its
33 power as specified in 6.1.2.3.2.

34 6.6.6.2.7.3 Starting Periodic Search following Soft Handoff

35 If the $PERIODIC_SEARCH_S$ is equal to '1', a periodic search is not already in progress, and
36 the frequency assignment after handoff is different from the Candidate Frequency
37 ($CDMABAND_S$ is not equal to $CF_CDMABAND_S$ or $CDMACH_S$ is not equal to CF_CDMACH_S),
38 the mobile station shall do the following:

- 1 • If the mobile station uses received power measurements in the search procedure, it
2 should start monitoring the received power on the Target Frequency and should
3 maintain an average of the received power over the last N_{12m} frames.
- 4 • The mobile station shall start a periodic search as described in 6.6.6.2.8.3.2.

5 6.6.6.2.8 CDMA-to-CDMA Hard Handoff

6 The base station directs the mobile station to perform a CDMA-to-CDMA hard handoff by
7 sending an *Extended Handoff Direction Message* or a *General Handoff Direction Message* in
8 which the mobile station is transitioned between disjoint sets of base stations, different
9 frequency assignments, or different frame offsets. If $RETURN_IF_HANDOFF_FAIL_s$ is equal
10 to '0', the mobile station performs the actions described in 6.6.6.2.8.1. If
11 $RETURN_IF_HANDOFF_FAIL_s$ is equal to '1', the mobile station performs the actions
12 described in 6.6.6.2.8.2.

13 6.6.6.2.8.1 Hard Handoff without Return on Failure

14 At the action time specified of the *Extended Handoff Direction Message* or *General Handoff*
15 *Direction Message*, the mobile station shall disable its transmitter, reset the fade timer
16 specified in 6.4.4, suspend incrementing TOT_FRAMES_s and BAD_FRAMES_s as specified in
17 6.6.4.1.1, and tune to the assigned Forward Traffic Channel. The mobile station shall
18 perform acquisition of the pilots in the new Active Set.

19 If a periodic Serving Frequency pilot report procedure is in progress, the mobile station
20 shall abort it (see 6.6.6.2.12).

21 The mobile station shall begin monitoring the assigned Forward Traffic Channel within the
22 time specified below:

- 23 • If the *Extended Handoff Direction Message* or *General Handoff Direction Message*
24 specifies a CDMA frequency assignment different from the Serving Frequency and
25 an Active Set containing pilots with pilot PN sequence offsets identical to those of
26 the pilots in the Serving Frequency Active Set, the mobile station shall begin
27 monitoring the assigned Forward Traffic Channel within T_{60m} seconds after the
28 action time.
- 29 • If the *Extended Handoff Direction Message* or *General Handoff Direction Message*
30 specifies a CDMA frequency assignment different from the Serving Frequency and
31 an Active Set containing a pilot with pilot PN sequence offset not equal to that of any
32 pilot in the Serving Frequency Active Set, the mobile station shall begin monitoring
33 the assigned Forward Traffic Channel within T_{61m} seconds after the action time.
- 34 • If the *Extended Handoff Direction Message* or *General Handoff Direction Message*
35 specifies a CDMA-to-CDMA hard handoff without changing the CDMA frequency
36 assignment, the mobile station shall begin monitoring the assigned Forward Traffic
37 Channel within T_{62m} seconds after the action time.

38 Upon receiving N_{11m} consecutive good frames on the assigned Forward Traffic Channel, the
39 mobile station shall re-enable its transmitter and transmit $NUM_PREAMBLE_s$ frames of the
40 Traffic Channel preamble followed by a *Handoff Completion Message*.

1 Upon receiving N_{3m} consecutive good frames on the assigned Forward Traffic Channel, the
 2 mobile station shall resume incrementing TOT_FRAMES_S and BAD_FRAMES_S as specified
 3 in 6.6.4.1.1.

4 If the PERIODIC SEARCH_S is equal to '1', a periodic search is not already in progress, and
 5 the frequency assignment after handoff is different from the Candidate Frequency
 6 (CDMABAND_S is not equal to CF_CDMABAND_S or CDMACH_S is not equal to CF_CDMACH_S),
 7 the mobile station shall do the following:

- 8 • If the mobile station uses received power measurements in the search procedure, it
 9 should start monitoring the received power on the Target Frequency and should
 10 maintain an average of the received power over the last N_{12m} frames.
- 11 • The mobile station shall start a periodic search as described in 6.6.6.2.8.3.2.

12 6.6.6.2.8.2 Hard Handoff with Return on Failure

13 At the action time specified in the *General Handoff Direction Message*, the mobile station
 14 shall do the following:

- 15 • The mobile station shall stop processing the Forward Fundamental Code Channel
 16 and the Forward Supplemental Code Channels (if any).
- 17 • The mobile station shall stop transmitting on the Reverse Fundamental Code
 18 Channel and on the Reverse Supplemental Code Channels (if any).
- 19 • The mobile station shall disable the fade timer (see 6.4.4) and the handoff drop
 20 timers corresponding to the Serving Frequency Active Set and Candidate Set (see
 21 6.6.6.2.3), and shall suspend incrementing TOT_FRAMES_S and BAD_FRAMES_S (see
 22 6.6.4.1.1).
- 23 • If Rate Set 2 is in use on the Reverse Traffic Channel, the mobile station shall store
 24 the erasure indicator bits for the last two frames received on the Forward Traffic
 25 Channel (see 6.2.2.3).
- 26 • The mobile station shall lock the accumulation of valid level changes in the closed
 27 loop mean output power and shall ignore received power control bits related to the
 28 period that the transmitter is disabled (see 6.1.2.3.2).
- 29 • If the Serving Frequency is different from the Target Frequency (CDMACH_S is not
 30 equal to TF_CDMACH_S or CDMABAND_S is not equal to TF_CDMABAND_S), the mobile
 31 station shall set CDMACH_S to TF_CDMACH_S and CDMABAND_S to TF_CDMABAND_S,
 32 and shall tune to the Target Frequency.

33 The mobile station shall not change its time reference (see 6.1.5) until the handoff is
 34 successfully completed (as described later in this section) or the mobile station resumes
 35 using the Serving Frequency Active Set (as described in 6.6.6.2.8.2.1).

36 The mobile station shall maintain a *handoff* timer. The mobile station shall set the
 37 expiration time for the handoff timer to $(0.08 \times TF_WAIT_TIME_S)$ seconds and enable the
 38 timer at the action time of the *General Handoff Direction Message*.

39 The mobile station shall perform the following actions:

- 1 • If the Target Frequency is different from the Serving Frequency ($TF_CDMABAND_S$ is
2 not equal to $SF_CDMABAND_S$, or TF_CDMACH_S is not equal to SF_CDMACH_S), the
3 mobile station shall measure the mean input power on the Target Frequency
4 ($target_freq_pwr$, in dBm / 1.23 MHz) and may use $target_freq_pwr$ along with the
5 measurement of the average input power on the Serving Frequency
6 ($avg_serving_freq_pwr$, in dBm / 1.23 MHz) in the handoff procedure. The mobile
7 station may declare the handoff attempt to be unsuccessful if all of the following
8 conditions are true:

- 9 - $DIFF_RX_PWR_THRESH_S$ is not equal to '00000',
- 10 - the mobile station has been measuring the received power on the Serving
11 Frequency for at least the last N_{12m} frames, and
- 12 - $(target_freq_pwr - avg_serving_freq_pwr)$ is less than $(-30 + 2 \times$
13 $DIFF_RX_PWR_THRESH_S)$ dB.

14 If the mobile station declares the handoff attempt to be unsuccessful, it shall restore
15 the configuration to what it was before the handoff attempt (see 6.6.6.2.5.1) and
16 send a *Candidate Frequency Search Report Message* as described in 6.6.6.2.8.2.1.

- 17 • The mobile station shall measure E_c/I_o for each pilot in the Active Set using the
18 procedures specified in 6.6.6.2.2, if any of the following conditions is true:
- 19 - the Target Frequency is the same as the Serving Frequency ($TF_CDMABAND_S$ is
20 equal to $SF_CDMABAND_S$, and TF_CDMACH_S is equal to SF_CDMACH_S),
- 21 - the mobile station does not use the power measurements in the handoff
22 procedure,
- 23 - $DIFF_RX_PWR_THRESH_S$ is equal to '00000',
- 24 - the mobile station has not been measuring the received power on the Serving
25 Frequency for at least the last N_{12m} frames, or
- 26 - $(target_freq_pwr - avg_serving_freq_pwr)$ is not less than $(-30 + 2 \times$
27 $DIFF_RX_PWR_THRESH_S)$ dB.

28 If the mobile station measures E_c/I_o for pilots in the Active Set, it shall compare the
29 sum of the measured E_c/I_o for all pilots with the minimum total pilot E_c/I_o
30 threshold ($MIN_TOTAL_PILOT_EC_IO_S$).

- 31 - If $MIN_TOTAL_PILOT_EC_IO_S$ is not equal to '00000', and $(-20 \times \log_{10}$
32 $(E_c/I_o)_{total})$ is less than $MIN_TOTAL_PILOT_EC_IO_S$, where $(E_c/I_o)_{total}$ is the
33 sum of the measured E_c/I_o for the pilots in the Active Set. The mobile station
34 shall declare the handoff attempt to be unsuccessful, and shall do the following:
- 35 + If $COMPLETE_SEARCH_S$ is equal to '1', and the Target Frequency is the
36 same as the Candidate Frequency ($TF_CDMABAND_S$ is equal to
37 $CF_CDMABAND_S$, and TF_CDMACH_S is equal to CF_CDMACH_S), the mobile
38 station shall measure the strength of each pilot in its Candidate Frequency
39 Search Set using the procedures specified in 6.6.6.2.2.
- 40 + Otherwise, the mobile station shall end the search.

The mobile station shall then restore its configuration to what it was before the handoff attempt (see 6.6.6.2.5.1) and send a *Candidate Frequency Search Report Message* as described in 6.6.6.2.8.2.1.

- If MIN_TOTAL_PILOT_EC_IO_s is equal to '00000', or $(-20 \times \log_{10}(E_c/I_o)_{\text{total}})$ is not less than MIN_TOTAL_PILOT_EC_IO_s, where $(E_c/I_o)_{\text{total}}$ is the sum of the measured E_c/I_o for the pilots in the Active Set, the mobile station shall attempt to demodulate the Forward Traffic Channel(s). If the Active Set contains more than one pilot, the mobile station shall perform the actions specified in 6.6.6.2.7. If the Target Frequency is the same as the Candidate Frequency (TF_CDMABAND_s is equal to CF_CDMABAND_s, and TF_CDMACH_s is equal to CF_CDMACH_s), and is different for the Serving Frequency (TF_CDMABAND_s is not equal to SF_CDMABAND_s, or TF_CDMACH_s is not equal to SF_CDMACH_s), the mobile station shall measure the strength of each pilot in its Candidate Frequency Search Set using the procedures specified in 6.6.6.2.2, while waiting for good frames on the Forward Traffic Channel(s). The mobile station shall wait for the first of the following events to occur:
 - + The handoff timer expires and the mobile station has not received N_{11m} consecutive good frames on the Forward Traffic Channel. In this case, the mobile station shall declare the handoff attempt to be unsuccessful, and do the following:
 - o If COMPLETE_SEARCH_s is equal to '1', and if the Target Frequency is the same as the Candidate Frequency (TF_CDMABAND_s is equal to CF_CDMABAND_s, and TF_CDMACH_s is equal to CF_CDMACH_s), and the mobile station has not completed the search of all pilots in its Candidate Frequency Search Set, then it shall complete the search, i.e., it shall obtain at least one measurement of the strength of each pilot in its Candidate Frequency Search Set, using the search procedures specified in 6.6.6.2.8.3.
 - o Otherwise, the mobile station shall end the search.

The mobile station shall then restore its configuration to what it was before the handoff attempt (see 6.6.6.2.5.1) and send a *Candidate Frequency Search Report Message* as described in 6.6.6.2.8.2.1.

- + The mobile station receives N_{11m} consecutive good frames on the Forward Traffic Channel. In this case, the mobile station shall declare the handoff attempt to be successful, and do the following:
 - o The mobile station shall disable the handoff timer.
 - o If TF_RESET_L2_s is equal to '1', the mobile station shall reset the acknowledgment procedures as specified in 6.6.4.1.3.3.
 - o If TF_RESET_FPC_s is equal to '1', the mobile station shall initialize the Forward Traffic Channel power control counters as specified in 6.6.4.1.1.1.

- o If the Target Frequency is the same as the Candidate Frequency (TF_CDMABAND_s is equal to CF_CDMABAND_s, and TF_CDMACH_s is equal to CF_CDMACH_s) and is different from the Serving Frequency (TF_CDMABAND_s is not equal to SF_CDMABAND_s, or TF_CDMACH_s is not equal to SF_CDMACH_s), the mobile station shall do the following:

- ◇ The mobile station shall replace its Neighbor Set with its Candidate Frequency Neighbor Set, excluding the pilots in its Active Set. When the mobile station adds a pilot from its Candidate Frequency Neighbor Set to its Active Set, it shall maintain SEARCH_PRIORITY_s and SRCH_WIN_NGHBR_s associated with the pilot.

- ◇ The mobile station shall set PILOT_INC_s to CF_PILOT_INC_s, SRCH_WIN_N_s to CF_SRCH_WIN_N_s, and SRCH_WIN_R_s to CF_SRCH_WIN_R_s.

- ◇ The mobile station shall set SEARCH_PRIORITY_INCL_s to CF_SEARCH_PRIORITY_INCL_s, and SRCH_WIN_NGHBR_INCL_s to CF_SRCH_WIN_NGHBR_INCL_s.

- o The mobile station shall re-enable its transmitter. After re-enabling its transmitter, the mobile station shall transmit NUM_PREAMBLE_s frames of the Traffic Channel preamble followed by a *Handoff Completion Message*.

- o Upon receiving N_{3m} consecutive good frames on the assigned Forward Traffic Channel, the mobile station shall resume incrementing TOT_FRAMES_s and BAD_FRAMES_s as specified in 6.6.4.1.1.

- o If the Target Frequency is same as the Candidate Frequency (TF_CDMABAND_s is equal to CF_CDMABAND_s and TF_CDMACH_s is equal to CF_CDMACH_s), then the mobile station shall set PERIODIC_SEARCH_s to '0'.

If PERIODIC_SEARCH_s is equal to '0', the mobile station may stop maintaining the average of the Serving Frequency received power that is used in the handoff and search procedures.

If PERIODIC_SEARCH_s is equal to '1', the mobile station shall do the following:

- ◇ If the mobile station uses received power measurements in the search procedure, it should start monitoring the received power on the Target Frequency and should maintain an average of the received power over the last N_{12m} frames.

- ◇ The mobile station shall start a periodic search as described in 6.6.6.2.8.3.2.

- o The mobile station shall maintain its pilot sets using the procedures described in 6.6.6.2.6.

6.6.6.2.8.2.1 Restoring the Configuration

If the mobile station declares a handoff attempt to be unsuccessful (see 6.6.6.2.8.2), it shall perform the following actions:

- If the handoff timer is enabled, the mobile station shall disable it.
- The mobile station shall restore the following parameters:
 - Message encryption mode: If SF_ENCRYPT_MODE_S is equal to '0', the mobile station shall turn off message encryption; otherwise, it shall turn on message encryption.
 - Service configuration: The mobile station shall use the service configuration stored in SF_SERVICE_CONFIG_S to process Forward and Reverse Traffic Channel frames.
 - Protocol revision level (P_REV_S = SF_P_REV_S)
 - Protocol revision level in use on the serving frequency (P_REV_IN_USE_S = SF_P_REV_IN_USE_S)
 - Service negotiation type (SERV_NEG_S = SF_SERV_NEG_S)
 - Long code mask: If SF_PRIVATE_LCM_S is equal to '1', the mobile station shall use the private long code mask; otherwise, it shall use the public long code mask.
 - Search window size for the Active Set and Candidate Set (SRCH_WIN_A_S = SF_SRCH_WIN_A_S)
 - Search window size for the Neighbor Set (SRCH_WIN_N_S = SF_SRCH_WIN_N_S)
 - Search window size for the Remaining Set (SRCH_WIN_R_S = SF_SRCH_WIN_R_S)
 - Pilot detection threshold (T_ADD_S = SF_T_ADD_S)
 - Pilot drop threshold (T_DROP_S = SF_T_DROP_S)
 - Soft slop for the dynamic add and drop threshold (SOFT_SLOPE_S = SF_SOFT_SLOPE_S)
 - Intercept for the dynamic add threshold (ADD_INTERCEPT_S = SF_ADD_INTERCEPT_S)
 - Intercept for the dynamic drop threshold (DROP_INTERCEPT_S = SF_DROP_INTERCEPT_S)
 - Active Set versus Candidate Set comparison threshold (T_COMP_S = SF_T_COMP_S)
 - Drop timer value (T_TDROP_S = SF_T_TDROP_S)
 - Frame offset (FRAME_OFFSET_S = SF_FRAME_OFFSET_S)
 - Nominal power setting (NOM_PWR_S = SF_NOM_PWR_S)

- 1 - Extended nominal power setting ($NOM_PWR_EXT_s = SF_NOM_PWR_EXT_s$)
- 2 - Power control step ($PWR_CNTL_STEP_s = SF_PWR_CNTL_STEP_s$)
- 3 - CDMA band class ($CDMABAND_s = SF_CDMABAND_s$)
- 4 - Frequency assignment ($CDMACH_s = SF_CDMACH_s$)
- 5 - Active Set (For each pilot in the Serving Frequency Active Set: (PILOT_PN,
- 6 PWR_COMB_IND))
- 7 - Code channel list ($CODE_CHAN_LIST_s = SF_CODE_CHAN_LIST_s$)
- 8 • The mobile station shall tune to the Serving Frequency and resume using the
- 9 Serving Frequency Active Set as follows:
 - 10 - The mobile station shall resume processing the Forward Fundamental Code
 - 11 Channel.
 - 12 - The mobile station shall resume transmitting on the Reverse Fundamental Code
 - 13 Channel. The mobile station shall not resume transmitting on the Reverse
 - 14 Supplemental Code Channels.
 - 15 - When the mobile station resumes transmission on the Reverse Traffic Channel,
 - 16 it shall use the following rules to re-enable its transmitter:
 - 17 + If the interval between the time that the mobile station disables its
 - 18 transmitter and the time that it resumes using the Serving Frequency Active
 - 19 Set is equal to or greater than ($N_{2m} \times 0.02$) seconds, then the mobile station
 - 20 shall wait to receive N_{3m} consecutive good frames before it re-enables its
 - 21 transmitter.
 - 22 + Otherwise, the mobile station shall re-enable its transmitter no later than
 - 23 $N_{3m} \times 0.02$ seconds after the mobile station tunes to the Serving Frequency.
 - 24 The mobile station should re-enable its transmitter earlier. After the mobile
 - 25 station re-enables its transmitter, the mean output power shall be as
 - 26 specified in 6.1.2.4.1 for a step change in input power. If the mobile station
 - 27 re-enables its transmitter earlier than $N_{3m} \times 0.02$ seconds after it tunes to
 - 28 the Serving Frequency, the initial mean output power shall be as specified in
 - 29 6.1.2.3.1, where the initial mean input power estimate is either:
 - 30 o within 6 dB of the actual mean input power, or
 - 31 o equal to the mean input power before the mobile station tuned to the
 - 32 Target Frequency.
 - 33 • The mobile station shall enable the fade timer and the handoff drop timers
 - 34 corresponding to the pilots in its Active Set and Candidate Set. The mobile station
 - 35 shall resume incrementing TOT_FRAMES_s and BAD_FRAMES_s as specified in
 - 36 6.6.4.1.1.
 - 37 • If Rate Set 2 is in use on the Reverse Traffic Channel, the mobile station shall set
 - 38 the erasure indicator bits as specified in 6.2.2.3.

- 1 • The mobile station shall send a *Candidate Frequency Search Report Message* within
2 T_{56m} seconds. The mobile station shall report the contents of the *Candidate*
3 *Frequency Search Report Message* as follows:
 - 4 – The mobile station shall report the two components of the Candidate Frequency
5 in the CDMA_FREQ and BAND_CLASS fields.
 - 6 – The mobile station shall report the received power on the Target Frequency and
7 on the Serving Frequency in the CF_TOTAL_RX_PWR and SF_TOTAL_RX_PWR
8 fields, respectively.
 - 9 – For each pilot in the Target Frequency Active Set that measures above
10 TF_T_ADD_S, the mobile station shall report its phase and strength in the fields
11 PILOT_PN_PHASE and PILOT_STRENGTH, respectively.
 - 12 – If the Target Frequency is the same as the Candidate Frequency
13 (TF_CDMABAND_S is equal to CF_CDMABAND_S, and TF_CDMACH_S is equal to
14 CF_CDMACH_S), and is different from the Serving Frequency (TF_CDMABAND_S
15 is not equal to SF_CDMABAND_S or TF_CDMACH_S is not equal to SF_CDMACH_S),
16 the mobile station shall also report the strength of each pilot in the Candidate
17 Frequency Search Set that measures above CF_T_ADD_S.
- 18 • If PERIODIC_SEARCH_S is equal to '0', the mobile station may stop maintaining the
19 average of the Serving Frequency received power that is used in the handoff and
20 search procedures.
- 21 • If PERIODIC_SEARCH_S is equal to '1' and the Candidate Frequency Search Set is
22 not empty, the mobile station shall do the following:
 - 23 – If the mobile station uses received power measurements in the search
24 procedure, it should start monitoring the received power on the Target
25 Frequency and should maintain an average of the received power over the last
26 N_{12m} frames.
 - 27 – The mobile station shall carry out the periodic search procedures described in
28 6.6.6.2.8.3.2.

29 6.6.6.2.8.3 Search of Pilots on the CDMA Candidate Frequency

30 If SEARCH_MODE_S is equal to '0000', the mobile station shall do the following: If
31 PERIODIC_SEARCH_S is equal to '0', the mobile station shall search the Candidate
32 Frequency Search Set once, as described in 6.6.6.2.8.3.1; otherwise, the mobile station
33 shall search the Candidate Frequency Search Set periodically, as described in 6.6.6.2.8.3.2.

34 6.6.6.2.8.3.1 CDMA Candidate Frequency Single Search

35 The mobile station does a single search of the Candidate Frequency Search Set by
36 performing the following actions at the action time of the *Candidate Frequency Search*
37 *Control Message* or the *Candidate Frequency Search Request Message*.

- 38 • The mobile station shall measure the strength of all pilots in the Candidate
39 Frequency Search Set in one or more visits to the Candidate Frequency, as
40 described in 6.6.6.2.8.3.3.

- The mobile station shall complete the measurements and send a *Candidate Frequency Search Report Message* within *freshness_interval* seconds after the action time of the *Candidate Frequency Search Control Message*, or the *Candidate Frequency Search Request Message*, where *freshness_interval* is determined as follows:

- If the value of the TOTAL_OFF_TIME_FWD field or of the TOTAL_OFF_TIME_REV field of the last *Candidate Frequency Search Response Message* sent by the mobile station to the base station is greater than or equal to $[(T_{70m} - T_{71m})/0.02]$, then

$$\text{freshness_interval} = \max(\text{fwd_time}, \text{rev_time}) + T_{71m} \text{ seconds,}$$

where

$$\text{fwd_time} = 0.02 \text{ seconds} \times (\text{value of the TOTAL_OFF_TIME_FWD field of the last } \textit{Candidate Frequency Search Response Message} \text{ sent by the mobile station}),$$

and

$$\text{rev_time} = 0.02 \text{ seconds} \times (\text{value of the TOTAL_OFF_TIME_REV field of the last } \textit{Candidate Frequency Search Response Message} \text{ sent by the mobile station}).$$

- Otherwise,

$$\text{freshness_interval} = T_{70m} \text{ seconds.}$$

The mobile station shall set the fields of the *Candidate Frequency Search Report Message* as follows:

- The mobile station shall report the two components of the Candidate Frequency in the CDMA_FREQ and BAND_CLASS fields.
- The mobile station shall report the received power on the Candidate Frequency and on the Serving Frequency in the CF_TOTAL_RX_PWR and SF_TOTAL_RX_PWR fields, respectively.
- For each pilot in the Candidate Frequency Search Set that measures above CF_T_ADD_s, the mobile station shall report its phase and strength in the fields PILOT_PN_PHASE and PILOT_STRENGTH, respectively.
- The mobile station may stop maintaining the average of the Serving Frequency received power that is used in the handoff and search procedures.

6.6.6.2.8.3.2 Candidate Frequency Periodic Search

When the mobile station performs a periodic search, it periodically searches the Candidate Frequency Search Set and reports the results to the base station in the *Candidate Frequency Search Report Message*, as described in this section. The mobile station may measure all pilots in the Candidate Frequency Search Set in one visit to the Candidate Frequency, or it may visit the Candidate Frequency several times in a search period, each

time measuring all or some of the pilots in the Candidate Frequency Search Set, as described in 6.6.6.2.8.3.3.

If $SF_TOTAL_EC_THRESH_S$ is not equal to '11111', while tuned to the Serving Frequency, the mobile station shall measure the total received power spectral density, in mW/1.23 MHz, on the Serving Frequency at least once every frame (0.02 second) and shall maintain the average of the spectral density (*spec_density*) over the last N_{12m} frames.

(In the following, $(E_c/I_o)_{total}$ is the total E_c/I_o of the pilots in the Active Set, measured as specified in 6.6.6.2.2, and *total_ec* is defined as $(10 \times \log_{10} ((E_c/I_o)_{total} \times spec_density))$.)

The mobile station shall maintain a periodic search timer as follows:

- When the mobile station starts a periodic search, it shall set the periodic search timer to the value in Table 6.6.6.2.8.3.2-1 corresponding to $SEARCH_PERIOD_S$ and shall enable the timer.
- When the periodic search timer expires, the mobile station shall reset the periodic search timer to the value in Table 6.6.6.2.8.3.2-1 corresponding to $SEARCH_PERIOD_S$ and shall re-enable the timer.
- If $SF_TOTAL_EC_THRESH_S$ is not equal to '11111' and $SF_TOTAL_EC_IO_THRESH_S$ is equal to '11111', the mobile station shall perform the following actions once per frame:
 - Disable the periodic search timer if *total_ec* is not less than $(-120 + 2 \times SF_TOTAL_EC_THRESH_S)$.
 - Reset the expiration time of the periodic search timer to the value in Table 6.6.6.2.8.3.2-1 corresponding to $SEARCH_PERIOD_S$, and re-enable the timer if the following conditions are true:
 - + the periodic search timer is disabled, and
 - + *total_ec* is less than $(-120 + 2 \times SF_TOTAL_EC_THRESH_S)$.
- If $SF_TOTAL_EC_THRESH_S$ is equal to '11111' and $SF_TOTAL_EC_IO_THRESH_S$ is not equal to '11111', the mobile station shall perform the following actions once per frame:
 - Disable the periodic search timer if $(-20 \times \log_{10} (E_c/I_o)_{total})$ is not greater than $SF_TOTAL_EC_IO_THRESH_S$.
 - Reset the expiration time of the periodic search timer to the value in Table 6.6.6.2.8.3.2-1 corresponding to $SEARCH_PERIOD_S$, and re-enable the timer if the following conditions are true:
 - + the periodic search timer is disabled, and
 - + $(-20 \times \log_{10} (E_c/I_o)_{total})$ is greater than $SF_TOTAL_EC_IO_THRESH_S$.
- If $SF_TOTAL_EC_THRESH_S$ is not equal to '11111' and $SF_TOTAL_EC_IO_THRESH_S$ is not equal to '11111', the mobile station shall perform the following actions once per frame:
 - Disable the periodic search timer if the following conditions are true:

- + $total_ec$ is not less than $(-120 + 2 \times SF_TOTAL_EC_THRESH_S)$, and
- + $(-20 \times \log_{10} (E_c/I_o)_{total})$ is not greater than $SF_TOTAL_EC_IO_THRESH_S$.
- Reset the expiration time of the periodic search timer to the value in Table 6.6.6.2.8.3.2-1 corresponding to $SEARCH_PERIOD_S$, and re-enable the timer if the following conditions are true:
 - + the periodic search timer is disabled, and
 - + $total_ec$ is less than $(-120 + 2 \times SF_TOTAL_EC_THRESH_S)$, or $(-20 \times \log_{10} (E_c/I_o)_{total})$ is greater than $SF_TOTAL_EC_IO_THRESH_S$.
- If $SF_TOTAL_EC_THRESH_S$ is equal to '11111' and $SF_TOTAL_EC_IO_THRESH_S$ is equal to '11111', the mobile station shall maintain the periodic search timer independent of the total E_c and the total E_c/I_o of the pilots in the Serving Frequency Active Set.

Table 6.6.6.2.8.3.2-1. Search Period Values

| $SEARCH_PERIOD_S$ | Search Period (seconds) | $SEARCH_PERIOD_S$ | Search Period (seconds) |
|--------------------|-------------------------|--------------------|-------------------------|
| 0 | 0.48 | 8 | 30 |
| 1 | 0.96 | 9 | 40 |
| 2 | 2 | 10 | 50 |
| 3 | 2.96 | 11 | 60 |
| 4 | 4 | 12 | 80 |
| 5 | 4.96 | 13 | 100 |
| 6 | 10 | 14 | 150 |
| 7 | 20 | 15 | 200 |

If the periodic search timer is enabled, the mobile station shall perform the following actions before the timer expires:

- The mobile station shall measure the strength of all pilots in the Candidate Frequency Search Set at least once, as described in 6.6.6.2.8.3.3.
- The mobile station shall send a *Candidate Frequency Search Report Message* if $MIN_TOTAL_PILOT_EC_IO_S$ is equal to '00000' or if $(-20 \times \log_{10} (E_c/I_o)_{total})$ is not less than $MIN_TOTAL_PILOT_EC_IO_S$, where $(E_c/I_o)_{total}$ is the sum of E_c/I_o for all those pilots that measure above $CF_T_ADD_S$ in the current search period.

The mobile station shall report the contents of the *Candidate Frequency Search Report Message* as follows:

- The mobile station shall report the two components of the Candidate Frequency in the $CDMA_FREQ$ and $BAND_CLASS$ fields.

- 1 - The mobile station shall report the received power on the Candidate Frequency
2 and on the Serving Frequency in the CF_TOTAL_RX_PWR and
3 SF_TOTAL_RX_PWR fields, respectively.
- 4 - For each pilot in the Candidate Frequency Search Set that measures above
5 CF_T_ADD_s, the mobile station shall report its phase and strength in the fields
6 PILOT_PN_PHASE and PILOT_STRENGTH, respectively.
- 7 • The mobile station shall ensure that the strength measurement for all pilots in the
8 Candidate Frequency Search Set were obtained within *freshness_interval* before the
9 Candidate Frequency Search Report Message is sent, where *freshness_interval* is
10 determined as follows:
 - 11 - If the value of the TOTAL_OFF_TIME_FWD field or of the TOTAL_OFF_TIME_REV
12 field of the last Candidate Frequency Search Response Message sent by the
13 mobile station to the base station is greater than or equal to
14 $[(T_{70m} - T_{71m})/0.02]$, then
15
$$\text{freshness_interval} = \max(\text{fwd_time}, \text{rev_time}) + T_{71m} \text{ seconds,}$$

16 where
17
$$\text{fwd_time} = 0.02 \text{ seconds} \times (\text{value of the TOTAL_OFF_TIME_FWD field of}$$

18 the last Candidate Frequency Search Response
19 Message sent by the mobile station),
20 and
21
$$\text{rev_time} = 0.02 \text{ seconds} \times (\text{value of the TOTAL_OFF_TIME_REV field of the}$$

22 last Candidate Frequency Search Response
23 Message sent by the mobile station).
 - 24 - Otherwise,
25
$$\text{freshness_interval} = T_{70m} \text{ seconds.}$$

26 6.6.6.2.8.3.3 Candidate Frequency Pilot Measurements

27 The mobile station measures the strength of all pilots in the Candidate Frequency Search
28 Set in one or more visits to the Candidate Frequency. The mobile station shall perform the
29 following actions each time it visits the Candidate Frequency to measure pilot strengths:

- 30 • The mobile station shall stop processing the Forward Fundamental Code Channel
31 and the Forward Supplemental Code Channels (if any).
- 32 • The mobile station shall stop transmitting on the Reverse Fundamental Code
33 Channel and on the Reverse Supplemental Code Channels (if any).
- 34 • The mobile station shall disable the fade timer (see 6.4.4) and the handoff drop
35 timers corresponding to its current Active Set and Candidate Set (see 6.6.6.2.3), and
36 shall suspend incrementing TOT_FRAMES_s and BAD_FRAMES_s (see 6.6.4.1.1).
- 37 • If Rate Set 2 is in use on the Reverse Traffic Channel, the mobile station shall store
38 the erasure indicator bits for the last two frames received on the Forward Traffic
39 Channel (see 6.2.2.3).

- The mobile station shall lock the accumulation of valid level changes in the closed loop mean output power and shall ignore received power control bits related to the period that the transmitter is disabled (see 6.1.2.3.2).

- The mobile station shall set the following parameters:

- $CDMABAND_S = CF_CDMABAND_S$
- $CDMACH_S = CF_CDMACH_S$
- $T_ADD_S = CF_T_ADD_S$

The mobile station shall tune to the Candidate Frequency.

- The mobile station shall not change its time reference (see 6.1.5) until it resumes using the Serving Frequency Active Set, as described below.
- The mobile station shall measure the mean input power on the Candidate Frequency (*cand_freq_pwr*, in dBm / 1.23 MHz), and may use *cand_freq_pwr* along with the measurement of the mean input power on the Serving Frequency (*avg_serving_freq_pwr*, in dBm / 1.23 MHz) in the search procedure as follows:
 - If $DIFF_RX_PWR_THRESH_S$ is not equal to '00000', and (*cand_freq_pwr* - *avg_serving_freq_pwr*) is less than $(-30 + 2 \times DIFF_RX_PWR_THRESH_S)$ dB, the mobile station may terminate the search for pilots in the current visit to the Candidate Frequency.
 - If $DIFF_RX_PWR_THRESH_S$ is equal to '00000', the mobile station does not use the power measurements in the search procedure, or (*cand_freq_pwr* - *avg_serving_freq_pwr*) is not less than $(-30 + 2 \times DIFF_RX_PWR_THRESH_S)$ dB, the mobile station shall measure E_c/I_0 for all or some of the pilots in its Candidate Frequency Search Set, using the search procedures specified in 6.6.6.2.2.
- The mobile station shall restore the following parameters:
 - Pilot detection threshold ($T_ADD_S = SF_T_ADD_S$)
 - CDMA band class ($CDMABAND_S = SF_CDMABAND_S$)
 - Frequency assignment ($CDMACH_S = SF_CDMACH_S$)
- The mobile station shall tune to the Serving Frequency and shall resume using the Serving Frequency Active Set as follows:
 - The mobile station shall resume processing the Forward Fundamental Code Channel. If the Forward Supplemental Code Channel assignment has not expired, the mobile station shall resume processing the Forward Supplemental Code Channels (if any).
 - If the Reverse Supplemental Code Channel assignment has not expired, the mobile station may resume transmitting on the Reverse Supplemental Code Channels (if any).
 - When the mobile station resumes transmission on the Reverse Traffic Channel, it shall use the following rules to re-enable its transmitter:

- 1 + If the interval between the time that the mobile station disables its
2 transmitter and the time that it resumes using the Serving Frequency Active
3 Set is equal to or greater than $(N_{2m} \times 0.02)$ seconds, then the mobile station
4 shall wait to receive N_{3m} consecutive good frames before it re-enables its
5 transmitter.
- 6 + Otherwise, the mobile station shall re-enable its transmitter no later than
7 $N_{3m} \times 0.02$ seconds after the mobile station tunes to the Serving Frequency.
8 The mobile station should re-enable its transmitter earlier. After the mobile
9 station re-enables its transmitter, the mean output power shall be as
10 specified in 6.1.2.4.1 for a step change in input power. If the mobile station
11 re-enables its transmitter earlier than $N_{3m} \times 0.02$ seconds after it tunes to
12 the Serving Frequency, the initial mean output power shall be as specified in
13 6.1.2.3.1, where the initial mean input power estimate is either:
 - 14 o within 6 dB of the actual mean input power, or
 - 15 o equal to the mean input power before the mobile station tuned to the
16 Target Frequency.
- 17 • The mobile station shall enable the fade timer and the handoff drop timers
18 corresponding to the pilots in its Active Set and Candidate Set. The mobile station
19 shall resume incrementing TOT_FRAMES_s and BAD_FRAMES_s as specified in
20 6.6.4.1.1.
- 21 • If Rate Set 2 is in use on the Reverse Traffic Channel, the mobile station shall set
22 the erasure indicator bits as specified in 6.2.2.3.

23 6.6.6.2.8.3.4 Aborting CDMA Candidate Frequency Periodic Search

24 When the mobile station aborts a periodic search, it shall do the following:

- 25 • The mobile station shall cancel any remaining visits to the Candidate Frequency in
26 the current search period, and shall not send a *Candidate Frequency Search Report*
27 *Message* for the current search period.
- 28 • The mobile station shall disable the periodic search timer.
- 29 • The mobile station may stop maintaining the average of the Serving Frequency
30 received power that is used in the handoff and search procedures.

31 6.6.6.2.9 CDMA-to-Analog Handoff

32 The base station directs the mobile station to perform a CDMA-to-Analog handoff by
33 sending an *Analog Handoff Direction Message*. If the mobile station has narrow analog
34 capability, the base station may direct the handoff to a narrow analog channel.

35 If the mobile station supports analog operation in the requested band class, the mobile
36 station shall set DTX_s to '00' and store the following parameters from the *Analog Handoff*
37 *Direction Message*.

- 38 • System identification (SID_s = SID_r)
- 39 • Voice mobile station attenuation code (VMAC_s = VMAC_r)

- 1 • Analog voice channel number ($ANALOG_CHAN_S = ANALOG_CHAN_T$)
- 2 • SAT color code ($SCC_S = SCC_T$)
- 3 • Message encryption mode indicator ($MEM_S = MEM_T$)
- 4 • Analog voice channel type ($AN_CHAN_TYPE_S = AN_CHAN_TYPE_T$)
- 5 • Digital supervisory audio color code ($DSCC_S = DSCC_MSB_T \times 4 + SCC_T$)

6 If the mobile station does not support analog operation in the requested band class, the
 7 mobile station shall discard the message and send a *Mobile Station Reject Order* with the
 8 ORDQ field set to '00000110' (capability not supported by the mobile station).

9 If the ACK_REQ field of the *Analog Handoff Direction Message* is set to '1', the mobile
 10 station shall acknowledge the message before the message action time, unless there is
 11 insufficient time to transmit a message containing the acknowledgment before the action
 12 time. Insufficient time is defined as an explicit action time shorter than the maximum
 13 implicit action time or too many outstanding messages remaining to be processed.

14 At the action time specified by the *Analog Handoff Direction Message* (see 6.6.4.1.5), the
 15 mobile station shall disable its transmitter. The mobile station shall enable its transmitter
 16 on the wide analog voice channel or optional narrow analog voice channel within T_{63m}
 17 seconds after the action time.

18 6.6.6.2.10 Search of Analog Frequencies

19 If SEARCH_MODE_S is equal to '0001', and the mobile station supports analog searching,
 20 the mobile station shall do the following: If PERIODIC_SEARCH_S is equal to '0', the mobile
 21 station shall search the Candidate Frequency Search Set once, as described in 6.6.6.2.10.1;
 22 otherwise, the mobile station shall search the Candidate Frequency Analog Search Set
 23 periodically, as described in 6.6.6.2.10.2.

24 6.6.6.2.10.1 Analog Frequencies Single Search

25 The mobile station does a single search of the Candidate Frequency Analog Search Set by
 26 performing the following actions at the action time of the *Candidate Frequency Search*
 27 *Control Message* or the *Candidate Frequency Search Request Message*:

- 28 • The mobile station shall measure the strength of all analog frequencies in the
 29 Candidate Frequency Analog Search Set in one or more visits away from the Serving
 30 Frequency, as described in 6.6.6.2.10.3.
- 31 • The mobile station shall complete the measurements and send a *Candidate*
 32 *Frequency Search Report Message* within *freshness_interval* seconds after the action
 33 time of the *Candidate Frequency Search Control Message* or the *Candidate*
 34 *Frequency Search Request Message*, where *freshness_interval* is determined as
 35 follows:
 - 36 – If the value of the TOTAL_OFF_TIME_FWD field or of the TOTAL_OFF_TIME_REV
 37 field of the last *Candidate Frequency Search Response Message* sent by the
 38 mobile station to the base station is greater than or equal to
 39 $[(T_{70m} - T_{71m})/0.02]$, then

$freshness_interval = \max(fwd_time, rev_time) + T_{71m}$ seconds,

where

$fwd_time = 0.02 \text{ seconds} \times (\text{value of the TOTAL_OFF_TIME_FWD field of the last Candidate Frequency Search Response Message sent by the mobile station}),$

and

$rev_time = 0.02 \text{ seconds} \times (\text{value of the TOTAL_OFF_TIME_REV field of the last Candidate Frequency Search Response Message sent by the mobile station}).$

– Otherwise,

$freshness_interval = T_{70m}$ seconds.

- The mobile station may stop maintaining the average of the Serving Frequency received power that is used in the handoff and search procedures.

6.6.6.2.10.2 Analog Frequencies Periodic Search

When the mobile station performs a periodic search, it periodically searches the Candidate Frequency Analog Search Set, and reports the results to the base station in the *Candidate Frequency Search Report Message*, as described in this section. The mobile station may measure all analog frequencies in the Candidate Frequency Analog Search Set in one visit away from the Serving Frequency, or it may make multiple visits in a search period, each time measuring all or some of the analog frequencies in the Candidate Frequency Analog Search Set, as described in 6.6.6.2.10.3.

If $SF_TOTAL_EC_THRESH_S$ is not equal to '11111', while tuned to the Serving Frequency, the mobile station shall measure the total received power spectral density, in mW/1.23 MHz, on the Serving Frequency at least once every frame (0.02 second) and shall maintain the average of the spectral density (*spec_density*) over the last N_{12m} frames.

(In the following, $(E_c/I_o)_{total}$ is the total E_c/I_o of the pilots in the Active Set, measured as specified in 6.6.6.2.2, and *total_ec* is defined as $(10 \times \log_{10} ((E_c/I_o)_{total} \times spec_density))$.)

The mobile station shall maintain a periodic search timer as follows:

- When the mobile station starts a periodic search, it shall set the periodic search timer to the value in Table 6.6.6.2.8.3.2-1 corresponding to $SEARCH_PERIOD_S$ and shall enable the timer.
- When the periodic search timer expires, the mobile station shall reset the periodic search timer to the value in Table 6.6.6.2.8.3.2-1 corresponding to $SEARCH_PERIOD_S$ and shall re-enable the timer.
- If $SF_TOTAL_EC_THRESH_S$ is not equal to '11111' and $SF_TOTAL_EC_IO_THRESH_S$ is equal to '11111', the mobile station shall perform the following actions once per frame:
 - Disable the periodic search timer if *total_ec* is not less than $(-120 + 2 \times SF_TOTAL_EC_THRESH_S)$.

- 1 - Reset the expiration time of the periodic search timer to the value in
2 Table 6.6.6.2.8.3.2-1 corresponding to SEARCH_PERIOD_S, and re-enable the
3 timer if the following conditions are true:
4 + the periodic search timer is disabled, and
5 + total_{ec} is less than $(-120 + 2 \times \text{SF_TOTAL_EC_THRESH}_S)$.
- 6 • If SF_TOTAL_EC_THRESH_S is equal to '11111' and SF_TOTAL_EC_IO_THRESH_S is
7 not equal to '11111', the mobile station shall perform the following actions once per
8 frame:
9 - Disable the periodic search timer if $(-20 \times \log_{10} (E_c/I_o)_{\text{total}})$ is not greater than
10 SF_TOTAL_EC_IO_THRESH_S.
11 - Reset the expiration time of the periodic search timer to the value in
12 Table 6.6.6.2.8.3.2-1 corresponding to SEARCH_PERIOD_S, and re-enable the
13 timer if the following conditions are true:
14 + the periodic search timer is disabled, and
15 + $(-20 \times \log_{10} (E_c/I_o)_{\text{total}})$ is greater than SF_TOTAL_EC_IO_THRESH_S.
- 16 • If SF_TOTAL_EC_THRESH_S is not equal to '11111' and SF_TOTAL_EC_IO_THRESH_S
17 is not equal to '11111', the mobile station shall perform the following actions once
18 per frame:
19 - Disable the periodic search timer if the following conditions are true:
20 + total_{ec} is not less than $(-120 + 2 \times \text{SF_TOTAL_EC_THRESH}_S)$, and
21 + $(-20 \times \log_{10} (E_c/I_o)_{\text{total}})$ is not greater than SF_TOTAL_EC_IO_THRESH_S.
22 - Reset the expiration time of the periodic search timer to the value in
23 Table 6.6.6.2.8.3.2-1 corresponding to SEARCH_PERIOD_S, and re-enable the
24 timer if the following conditions are true:
25 + the periodic search timer is disabled, and
26 + total_{ec} is less than $(-120 + 2 \times \text{SF_TOTAL_EC_THRESH}_S)$, or
27 + $(-20 \times \log_{10} (E_c/I_o)_{\text{total}})$ is greater than SF_TOTAL_EC_IO_THRESH_S.
- 28 • If SF_TOTAL_EC_THRESH_S is equal to '11111' and SF_TOTAL_EC_IO_THRESH_S is
29 equal to '11111', the mobile station shall maintain the periodic search timer
30 independent of the total E_c and the total E_c/I_o of the pilots in the Serving Frequency
31 Active Set.

32 If the periodic search timer is enabled, the mobile station shall perform the following
33 actions before the timer expires:

- 34 • The mobile station shall measure the strength of all analog frequencies in the
35 Candidate Frequency Analog Search Set at least once, as described in 6.6.6.2.10.3.

- 1 • The mobile station shall set the fields of the *Candidate Frequency Search Report*
2 *Message* as follows: The mobile station shall report the received power on the
3 Serving Frequency in the TOTAL_RX_PWR_SF field. For each frequency in the
4 Candidate Frequency Analog Search Set, the mobile station shall report its
5 frequency and strength in the fields ANALOG_FREQ and SIGNAL_STRENGTH,
6 respectively.
- 7 • The mobile station shall ensure that the strength measurements for all analog
8 frequencies in the Candidate Frequency Analog Search Set were obtained within
9 *freshness_interval* before the *Candidate Frequency Search Report Message* is sent,
10 where *freshness_interval* is determined as follows:
 - 11 - If the value of the TOTAL_OFF_TIME_FWD field or of the TOTAL_OFF_TIME_REV
12 field of the last *Candidate Frequency Search Response Message* sent by the
13 mobile station to the base station is greater than or equal to
14 $[(T_{70m} - T_{71m})/0.02]$, then
15
$$\text{freshness_interval} = \max(\text{fwd_time}, \text{rev_time}) + T_{71m} \text{ seconds,}$$
16 where
17
$$\text{fwd_time} = 0.02 \text{ seconds} \times (\text{value of the TOTAL_OFF_TIME_FWD field of}$$

18 the last *Candidate Frequency Search Response*
19 *Message* sent by the mobile station),
20 and
21
$$\text{rev_time} = 0.02 \text{ seconds} \times (\text{value of the TOTAL_OFF_TIME_REV field of the}$$

22 last *Candidate Frequency Search Response*
23 *Message* sent by the mobile station).
24 - Otherwise,
25
$$\text{freshness_interval} = T_{70m} \text{ seconds.}$$

26 6.6.6.2.10.3 Analog Frequency Measurements

27 The mobile station measures the strength of all analog frequencies in the Candidate
28 Frequency Analog Search Set in one or more visits away from the Serving Frequency. The
29 mobile station shall perform the following actions during each visit away from the Serving
30 Frequency to measure analog frequency signal strengths:

- 31 • The mobile station shall stop processing the Forward Fundamental Code Channel
32 and the Forward Supplemental Code Channels (if any).
- 33 • The mobile station shall stop transmitting on the Reverse Fundamental Code
34 Channel and on the Reverse Supplemental Code Channels (if any).
- 35 • The mobile station shall disable the fade timer (see 6.4.4) and the handoff drop
36 timers corresponding to its current Active Set and Candidate Set (see 6.6.6.2.3), and
37 shall suspend incrementing TOT_FRAMES_s and BAD_FRAMES_s (see 6.6.4.1.1).

- 1 • If Rate Set 2 is in use on the Reverse Traffic Channel, the mobile station shall store
2 the erasure indicator bits for the last two frames received on the Forward Traffic
3 Channel (see 6.2.2.3).
- 4 • The mobile station shall lock the accumulation of valid level changes in the closed
5 loop mean output power and shall ignore received power control bits related to the
6 period that the transmitter is disabled (see 6.1.2.3.2).
- 7 • The mobile station shall tune to one of the analog frequencies in the Candidate
8 Frequency Analog Search Set, and shall measure the mean input power on the
9 analog frequency.
- 10 • The mobile station may tune to other frequencies in the Candidate Frequency
11 Analog Search Set and make power measurements during this visit away from the
12 Serving Frequency.
- 13 • The mobile station shall not change its time reference (see 6.1.5) until it resumes
14 using the Serving Frequency Active Set, as described below.
- 15 • The mobile station shall tune to the Serving Frequency and resume using the
16 Serving Frequency Active Set as follows:
 - 17 – The mobile station shall resume processing the Forward Fundamental Code
18 Channel. If the Forward Supplemental Code Channel assignment has not
19 expired, the mobile station shall resume processing the Forward Supplemental
20 Code Channels (if any).
 - 21 – If the Reverse Supplemental Code Channel assignment has not expired, the
22 mobile station may resume transmitting on the Reverse Supplemental Code
23 Channels (if any).
 - 24 – When the mobile station resumes transmission on the Reverse Traffic Channel,
25 it shall use the following rules to re-enable its transmitter:
 - 26 + If the interval between the time that the mobile station disables its
27 transmitter and the time that it resumes using the Serving Frequency Active
28 Set is equal to or greater than $(N_{2m} \times 0.02)$ seconds, then the mobile station
29 shall wait to receive N_{3m} consecutive good frames before it re-enables its
30 transmitter.
 - 31 + Otherwise, the mobile station shall re-enable its transmitter no later than
32 $N_{3m} \times 0.02$ seconds after the mobile station tunes to the Serving Frequency.
33 The mobile station should re-enable its transmitter earlier. After the mobile
34 station re-enables its transmitter, the mean output power shall be as
35 specified in 6.1.2.4.1 for a step change in input power. If the mobile station
36 re-enables its transmitter earlier than $N_{3m} \times 0.02$ seconds after it tunes to
37 the Serving Frequency, the initial mean output power shall be as specified in
38 6.1.2.3.1, where the initial mean input power estimate is either:
 - 39 o within 6 dB of the actual mean input power, or
 - 40 o equal to the mean input power before the mobile station tuned to the
41 Target Frequency.

- 1 • The mobile station shall enable the fade timer and the handoff drop timers
2 corresponding to the pilots in its Active Set and Candidate Set. The mobile station
3 shall resume incrementing TOT_FRAMES_s and BAD_FRAMES_s as specified in
4 6.6.4.1.1.
- 5 • If Rate Set 2 is in use on the Reverse Traffic Channel, the mobile station shall set
6 the erasure indicator bits as specified in 6.2.2.3.

7 6.6.6.2.10.4 Aborting Analog Frequencies Periodic Search

8 When the mobile station aborts a periodic search, it shall do the following:

- 9 • The mobile station shall cancel any remaining visits away from the Serving
10 Frequency in the current search period and shall not send a *Candidate Frequency*
11 *Search Report Message* for the current search period.
- 12 • The mobile station shall disable the periodic search timer.
- 13 • The mobile station may stop maintaining the average of the Serving Frequency
14 received power that is used in the handoff and search procedures.

15 6.6.6.2.11 Processing of Reverse Supplemental Code Channels

16 If USE_T_ADD_ABORT_s is set to '1', and the strength of a Neighbor Set or Remaining Set
17 pilot is found to be above T_ADD_s, then the mobile station shall terminate any active
18 transmission on Reverse Supplemental Code Channels at the end of the current 20 ms
19 frame. The mobile station shall do the following:

- 20 • Any previously active Reverse Supplemental Code Channel assignment (via a
21 *Supplemental Channel Assignment Message* or *General Handoff Direction Message*)
22 shall be considered implicitly terminated, and the mobile station shall set
23 NUM_REV_CODES_s to '000'.
- 24 • The mobile station shall set IGNORE_SCAM_s to '1'.
- 25 • The mobile station shall set SCRM_SEQ_NUM_s to (SCRM_SEQ_NUM_s + 1) mod 16.
- 26 • The mobile station shall transmit a *Supplemental Channel Request Message* with
27 USE_SCRM_SEQ_NUM set to '1', SCRM_SEQ_NUM set to SCRM_SEQ_NUM_s, and
28 SIZE_OF_REQ_BLOB set to '0000'.

29 6.6.6.2.12 Periodic Serving Frequency Pilot Report Procedure

30 The mobile station shall continuously measure the total received power spectral density, in
31 mW/1.23 MHz, on the Serving Frequency at least once every frame (0.02 seconds) and
32 maintain the average value, *spec_density*, over the last N_{12m} frames. The mobile station
33 shall maintain the PPSMM timer as follows:

- 34 • When the mobile station starts a Periodic Serving Frequency Pilot Report Procedure,
35 it shall set the PPSMM timer to PPSMM_PERIOD_s × 0.08 seconds and shall enable
36 the timer.

- 1 • When the PPSMM timer expires, the mobile station shall send a *Periodic Pilot*
2 *Strength Measurement Message* (6.6.6.2.5.2) to the base station, reset the PPSMM
3 timer to $\text{PPSMM_PERIOD}_S \times 0.08$ seconds and shall re-enable the timer.
- 4 • When the mobile station receives an *Extended Handoff Direction Message* or a
5 *General Handoff Direction Message* directing the mobile station to perform a hard
6 handoff (see 6.6.6.2.5.1), it shall abort the Periodic Serving Frequency Pilot Report
7 Procedure and disable the PPSMM timer if it is enabled.
- 8 • If $\text{MIN_PILOT_PWR_THRESH}_S$ is not equal to '11111' and
9 $\text{MIN_PILOT_EC_IO_THRESH}_S$ is equal to '11111', the mobile station shall perform
10 the following actions once per frame:
 - 11 – Disable the PPSMM timer if the received total energy per PN chip, E_C , of the
12 pilots in the Active Set is not less than $(-120 + 2 \times \text{MIN_PILOT_PWR_THRESH}_S)$,
13 where the value of E_C is computed as $10 \times \log_{10}(\text{PS} \times \text{spec_density})$ and PS is
14 the total E_C/I_0 of the pilots in the Active Set measured as specified in 6.6.6.2.2.
 - 15 – Reset the expiration time of the PPSMM timer to $\text{PPSMM_PERIOD}_S \times 0.08$
16 seconds and re-enable the timer if the following conditions are true:
 - 17 o the PPSMM timer is disabled, and
 - 18 o the received total energy per PN chip, E_C , of the pilots in the Active Set is less
19 than $(-120 + 2 \times \text{MIN_PILOT_PWR_THRESH}_S)$.
- 20 • If $\text{MIN_PILOT_PWR_THRESH}_S$ is equal to '11111' and $\text{MIN_PILOT_EC_IO_THRESH}_S$
21 is not equal to '11111', the mobile station shall perform the following actions once
22 per frame:
 - 23 – Disable the PPSMM timer if the total pilot strength of the pilots in the Active Set,
24 PS, satisfies the condition that $(-20 \times \log_{10}(\text{PS}))$ is not greater than
25 $\text{MIN_PILOT_EC_IO_THRESH}_S$.
 - 26 – Reset the expiration time of the PPSMM timer to $\text{PPSMM_PERIOD}_S \times 0.08$
27 seconds and re-enable the timer if the following conditions are true:
 - 28 o the PPSMM timer is disabled, and
 - 29 o the total pilot strength of the pilots in the Active Set, PS, satisfies the
30 condition that $(-20 \times \log_{10}(\text{PS}))$ is greater than $\text{MIN_PILOT_EC_IO_THRESH}_S$.
- 31 • If $\text{MIN_PILOT_PWR_THRESH}_S$ is not equal to '11111' and
32 $\text{MIN_PILOT_EC_IO_THRESH}_S$ is not equal to '11111', the mobile station shall
33 perform the following actions once per frame:
 - 34 – Disable the PPSMM timer if the following conditions are true:
 - 35 o the received total energy per PN chip, E_C , of the pilots in the Active Set is not
36 less than $(-120 + 2 \times \text{MIN_PILOT_PWR_THRESH}_S)$, and
 - 37 o the total pilot strength of the pilots in the Active Set, PS, satisfies the
38 condition that $(-20 \times \log_{10}(\text{PS}))$ is not greater than
39 $\text{MIN_PILOT_EC_IO_THRESH}_S$.

- 1 - Reset the expiration time of the PPSMM timer to $\text{PPSMM_PERIOD}_S \times 0.08$
2 seconds and re-enable the timer if the following conditions are true:
 - 3 o the PPSMM timer is disabled, and
 - 4 o the received total energy per PN chip, E_C , of the pilots in the Active Set is less
5 than $(-120 + 2 \times \text{MIN_PILOT_PWR_THRESH}_S)$, or the total pilot strength of
6 the pilots in the Active Set, PS , satisfies the condition that $(-20 \times \log_{10}(PS))$ is
7 greater than $\text{MIN_PILOT_EC_IO_THRESH}_S$.
- 8 • If $\text{MIN_PILOT_PWR_THRESH}_S$ is equal to '11111' and $\text{MIN_PILOT_EC_IO_THRESH}_S$
9 is equal to '11111', the mobile station shall maintain the PPSMM timer independent
10 of the received power and the total E_C/I_0 of the pilots.

11 6.6.6.3 Examples

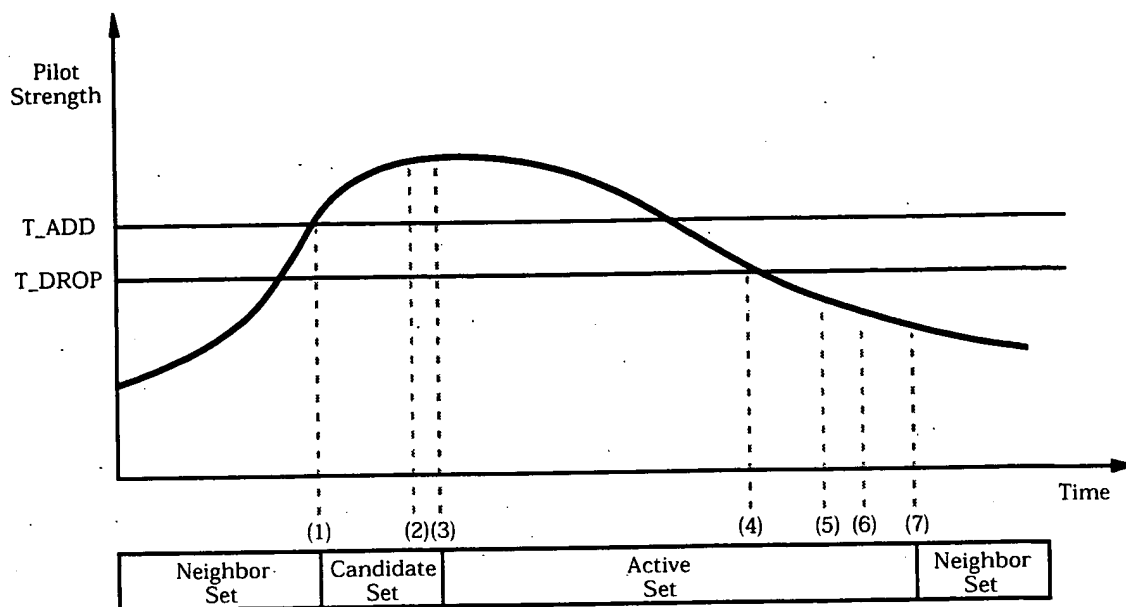
12 The following examples illustrate typical message exchanges between the mobile station
13 and the base station during handoff. Refer to Annex B for examples of call processing
14 during handoff.

15 Figure 6.6.6.3-1 shows an example of the messages exchanged between the mobile station
16 and the base station during a typical handoff process if $P_REV_IN_USE_S$ is less than or
17 equal to three or SOFT_SLOPE_S is equal to '000000'.

18 Figure 6.6.6.3-2 shows an example of the messages exchanged between the mobile station
19 and the base station during a typical handoff process if $P_REV_IN_USE_S$ is greater than
20 three and SOFT_SLOPE_S is not equal to '000000'.

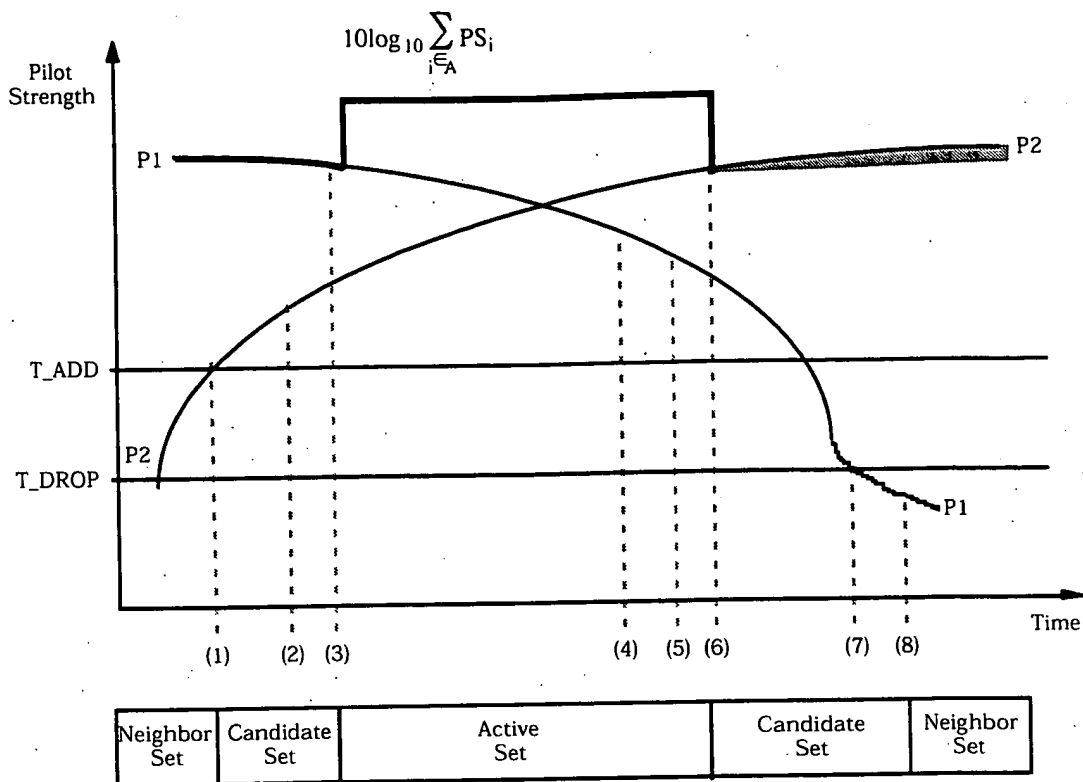
21 Figure 6.6.6.3-3 illustrates the messaging triggered by a pilot of the Candidate Set as its
22 strength gradually rises above the strength of each pilot of the Active Set if $P_REV_IN_USE_S$
23 is less than or equal to three, or SOFT_SLOPE_S is equal to '000000'. Note that the mobile
24 station reports that a Candidate Set pilot is stronger than an Active Set pilot only if the
25 difference between their respective strengths is at least $T_COMP \times 0.5$ dB.

26 Figure 6.6.6.3-4 illustrates the messaging triggered by a pilot of the Candidate Set as its
27 strength gradually rises above the strength of each pilot of the Active Set if $P_REV_IN_USE_S$
28 is greater than three and SOFT_SLOPE_S is not equal to '000000'. Note that the mobile
29 station reports that a Candidate Set pilot is stronger than an Active Set pilot only if the
30 difference between their respective strengths is at least $T_COMP \times 0.5$ dB and Pilot P_0
31 strength exceeds $[(\text{SOFT_SLOPE}/8) \times 10 \times \log_{10}(PS_1 + PS_2) + \text{ADD_INTERCEPT}/2]$.



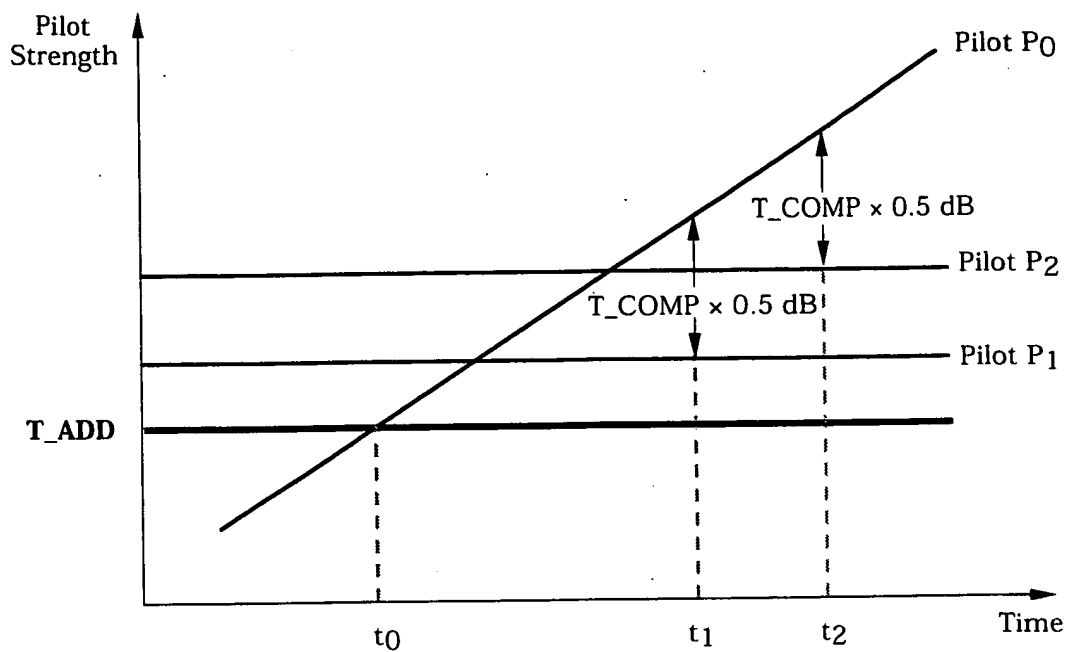
- (1) Pilot strength exceeds T_{ADD} . Mobile station sends a *Pilot Strength Measurement Message* and transfers pilot to the Candidate Set.
- (2) Base station sends an *Extended Handoff Direction Message* or a *General Handoff Direction Message*.
- (3) Mobile station transfers pilot to the Active Set and sends a *Handoff Completion Message*.
- (4) Pilot strength drops below T_{DROP} . Mobile station starts the handoff drop timer.
- (5) Handoff drop timer expires. Mobile station sends a *Pilot Strength Measurement Message*.
- (6) Base station sends an *Extended Handoff Direction Message* or a *General Handoff Direction Message*.
- (7) Mobile station moves pilot from the Active Set to the Neighbor Set and sends a *Handoff Completion Message*.

Figure 6.6.6.3-1. Handoff Threshold Example if $P_{REV_IN_USE_s}$ is Less Than or Equal to Three, or $SOFT_SLOPE_s$ is Equal to '000000'



- (1) Pilot P₂ strength exceeds T_ADD. Mobile station transfers the pilot to the Candidate Set.
- (2) Pilot P₂ strength exceeds $[(\text{SOFT_SLOPE}/8) \times 10 \times \log_{10}(\text{PS}_1) + \text{ADD_INTERCEPT}/2]$. Mobile station sends a *Pilot Strength Measurement Message*.
- (3) Mobile station receives an *Extended Handoff Direction Message* or a *General Handoff Direction Message*, transfers the pilot P₂ to the Active Set, and sends a *Handoff Completion Message*.
- (4) Pilot P₁ strength drops below $[(\text{SOFT_SLOPE}/8) \times 10 \times \log_{10}(\text{PS}_2) + \text{DROP_INTERCEPT}/2]$. Mobile station starts the handoff drop timer.
- (5) Handoff drop timer expires. Mobile station sends a *Pilot Strength Measurement Message*.
- (6) Mobile station receives an *Extended Handoff Direction Message* or a *General Handoff Direction Message*, transfers the pilot P₁ to the Candidate Set and sends a *Handoff Completion Message*.
- (7) Pilot P₁ strength drops below T_DROP. Mobile station starts the handoff drop timer.
- (8) Handoff drop timer expires. Mobile station moves the pilot P₁ from the Candidate Set to the Neighbor Set.

Figure 6.6.6.3-2. Handoff Threshold Example if P_REV_IN_USE_s is Greater Than Three, and SOFT_SLOPE_s is Not Equal to '000000'



1 Candidate Set: Pilot P₀

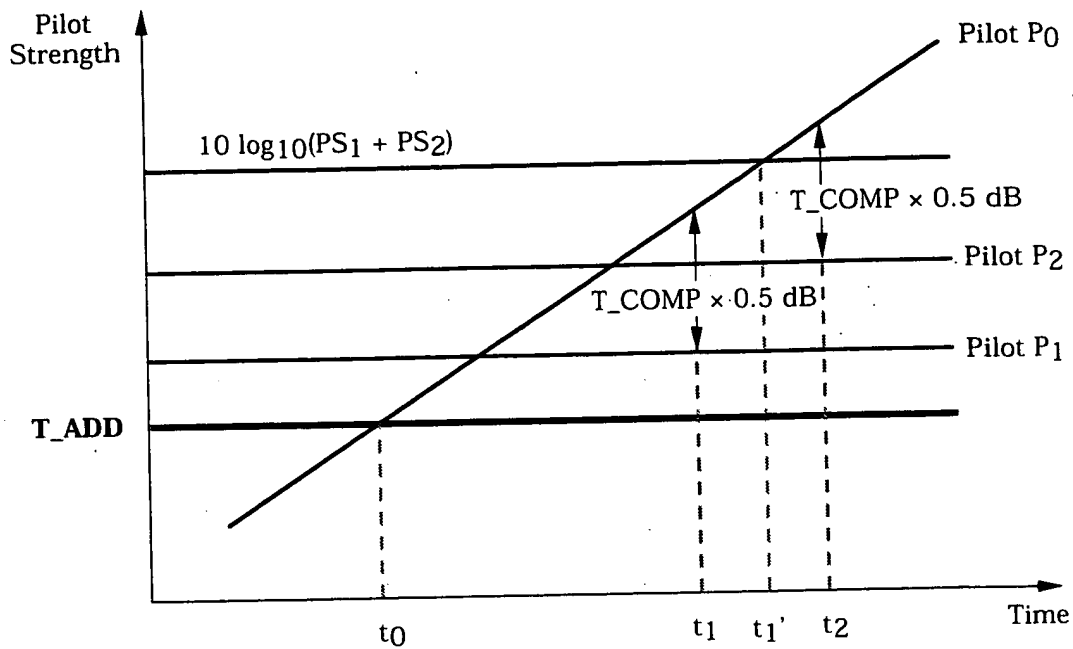
2 Active Set: Pilots P₁, P₂

3 t_0 - Pilot Strength Measurement Message sent, $P_0 > T_ADD$

4 t_1 - Pilot Strength Measurement Message sent, $P_0 > P_1 + T_COMP \times 0.5 \text{ dB}$

5 t_2 - Pilot Strength Measurement Message sent, $P_0 > P_2 + T_COMP \times 0.5 \text{ dB}$

6
7 **Figure 6.6.6.3-3. Pilot Strength Measurements Triggered by a Candidate Pilot if**
8 **$P_REV_IN_USE_s \leq 3$ or $SOFT_SLOPE_s = '000000'$**



Candidate Set: Pilot P₀

Active Set: Pilots P₁, P₂

t₀ - Pilot Strength Measurement Message not sent because
 $[10 \times \log_{10}(PS_0)] < [(SOFT_SLOPE/8) \times 10 \times \log_{10}(PS_1 + PS_2) + ADD_INTERCEPT/2]$

t₁ - Pilot Strength Measurement Message not sent because
 $P_0 > [P_1 + T_COMP \times 0.5 \text{ dB}]$ but
 $[10 \times \log_{10}(PS_0)] < [(SOFT_SLOPE/8) \times 10 \times \log_{10}(PS_1 + PS_2) + ADD_INTERCEPT/2]$

t_{1'} - Pilot Strength Measurement Message sent because
 $[10 \times \log_{10}(PS_0)] > [(SOFT_SLOPE/8) \times 10 \times \log_{10}(PS_1 + PS_2) + ADD_INTERCEPT/2]$

t₂ - Pilot Strength Measurement Message sent because
 $P_0 > [P_2 + T_COMP \times 0.5 \text{ dB}]$ and
 $[10 \times \log_{10}(PS_0)] > [(SOFT_SLOPE/8) \times 10 \times \log_{10}(PS_1 + PS_2) + ADD_INTERCEPT/2]$

Figure 6.6.6.3-4. Pilot Strength Measurements Triggered by a Candidate Pilot if $P_REV_IN_USE_s > 3$ and $SOFT_SLOPE_s \neq '000000'$

6.6.7 Hash Functions and Randomization

6.6.7.1 Hash Function

Certain procedures require a uniform distribution of mobile stations among N resources. The following function returns an integer, using as arguments the mobile station's IMSI or ESN, the number of resources N , and a modifier DECORR. The modifier serves to decorrelate the values obtained for the various applications from the same mobile station.

If the hashing function is to be used for determining the Access Channel PN Randomization, HASH_KEY shall be equal to the mobile station ESN. Otherwise, HASH_KEY shall be equal to the 32 least significant bits of $\text{IMSI_O_S1} + 2^{24} \times \text{IMSI_O_S2}$.

Define:

- Word L to be bits 0-15 of HASH_KEY
- Word H to be bits 16-31 of HASH_KEY

where bit 0 is the least significant bit of HASH_KEY. The hash value is computed as follows:¹⁴

$$R = \lfloor N \times ((40503 \times (L \oplus H \oplus \text{DECORR})) \bmod 2^{16}) / 2^{16} \rfloor$$

The mobile station shall choose the range N and the 16-bit modifier DECORR according to the application as shown in Table 6.6.7.1-1. In the table, HASH_KEY [0...11] denotes the 12 least significant bits of HASH_KEY.

Table 6.6.7.1-1. Hash Function Modifier

| Application | N | DECORR | Return Value |
|---------------------------------|--|--------------------------------------|--------------|
| CDMA Channel Number | Number of channels in last <i>CDMA Channel List Message</i> (up to 10) | 0 | $R + 1$ |
| Paging Channel Number | PAGE_CHAN _s from <i>System Parameters Message</i> (up to 7) | $2 \times \text{HASH_KEY [0...11]}$ | $R + 1$ |
| Paging Slot Number | 2048 | $6 \times \text{HASH_KEY[0...11]}$ | R |
| Access Channel PN Randomization | $2^{\text{PROBE_PN_RAN}_s}$ where PROBE_PN_RAN _s is from <i>Access Parameters Message</i> (up to 512) | $14 \times \text{HASH_KEY[0...11]}$ | R |

¹⁴ This formula is adapted from Knuth, Donald N., *The Art of Computer Programming*, 2 volumes, (Reading, MA, Addison-Wesley, 1998).

6.6.7.2 Pseudorandom Number Generator

Where pseudorandom numbers are needed, a linear congruential generator shall be used. The mobile station shall implement the linear congruential generator defined by:

$$z_n = a \times z_{n-1} \bmod m$$

where $a = 7^5 = 16807$ and $m = 2^{31} - 1 = 2147483647$. z_n is the output of the generator.¹⁵

During the *Mobile Station Initialization State*, the mobile station shall seed its generator with

$$z_0 = (\text{ESN} \oplus \text{RANDOM_TIME}) \bmod m$$

where *RANDOM_TIME* shall be the least-significant 32-bits of *SYS_TIME_s* stored from the *Sync Channel Message*. If the initial value so produced is found to be zero, it shall be replaced with one. The mobile station shall compute a new z_n for each subsequent use.

The mobile station shall use the value $u_n = z_n / m$ for those applications that require a binary fraction u_n , $0 < u_n < 1$.

The mobile station shall use the value $k_n = \lfloor N \times z_n / m \rfloor$ for those applications that require a small integer k_n , $0 \leq k_n \leq N - 1$.

6.6.8 CODE_CHAN_LIST_s Maintenance

The *CODE_CHAN_LIST_s* is a descriptive structure used to manage the Forward Fundamental Code Channel and Forward Supplemental Code Channels, if any, associated with the mobile station's Active Set. Associated with each member of the mobile station's Active Set, there is an ordered array of code channels. The first entry of the ordered array specifies the Forward Fundamental Code Channel associated with the pilot and the subsequent entries, if any, specify the Forward Supplemental Code Channels associated with the pilot. The *CODE_CHAN_LIST_s* is the collection of ordered arrays of code channels for each member of the mobile station's Active Set. The i^{th} entry in every array (of code channels associated with a member of the Active Set) corresponds to the i^{th} code channel.

The mobile station shall maintain the *CODE_CHAN_LIST_s* as follows:

- When the mobile station is first assigned a Forward Fundamental Code Channel, it shall initialize the *CODE_CHAN_LIST_s* to contain the Forward Fundamental Code Channel for each member of the Active Set.
- When the mobile station processes the *Extended Handoff Direction Message*, the mobile station shall update the *CODE_CHAN_LIST_s* as follows:
 - For each pilot listed in the *Extended Handoff Direction Message* which does not have a corresponding code channel in the *CODE_CHAN_LIST_s*, the mobile station shall add the code channel, *CODE_CHAN*, of that pilot to the *CODE_CHAN_LIST_s*, as the Forward Fundamental Code Channel for the pilot,

¹⁵ This generator has full period, ranging over all integers from 1 to $m-1$; the values 0 and m are never produced. Several suitable implementations can be found in Park, Stephen K. and Miller, Keith W., "Random Number Generators: Good Ones are Hard to Find," *Communications of the ACM*, vol. 31, no. 10, October 1988, pp. 1192-1201.

- 1 - The mobile station shall delete all information in the CODE_CHAN_LIST_S
2 associated with a pilot that is not included in the *Extended Handoff Direction*
3 *Message*.
- 4 • When the mobile station processes the *General Handoff Direction Message*, the
5 mobile station shall update the CODE_CHAN_LIST_S to contain the Forward
6 Fundamental Code Channel associated with each pilot included in the *General*
7 *Handoff Direction Message*. The first code channel occurrence associated with each
8 pilot included in the *General Handoff Direction Message* corresponds to the Forward
9 Fundamental Code Channel. The mobile station shall do the following:
 - 10 - If FOR_SUP_CONFIG_r is included and FOR_SUP_CONFIG_r is equal to '10' or '11',
11 the mobile station shall perform the following actions:
 - 12 + For each pilot listed in the *General Handoff Direction Message*, the mobile
13 station shall set the Forward Supplemental Code Channels (associated with
14 the pilot) in the CODE_CHAN_LIST_S to the Forward Supplemental Code
15 Channels specified in the *General Handoff Direction Message*.
 - 16 + The mobile station shall delete all information in the CODE_CHAN_LIST_S
17 associated with a pilot that is not included in the *General Handoff Direction*
18 *Message*.
 - 19 - If FOR_SUP_CONFIG_r is equal to '00' or '01' or if FOR_SUP_CONFIG_r is not
20 included in the *General Handoff Direction Message*, the mobile station shall not
21 update Supplemental Code Channels associated with the pilots included in the
22 *General Handoff Direction Message*. The mobile station shall perform the
23 following actions:
 - 24 + For each pilot listed in the *General Handoff Direction Message* which does
25 not have a corresponding code channel in the CODE_CHAN_LIST_S, the
26 mobile station shall add the code channel, CODE_CHAN, of that pilot to the
27 CODE_CHAN_LIST_S, as the Forward Fundamental Code Channel for the
28 pilot.
 - 29 + The mobile station shall delete all information in the CODE_CHAN_LIST_S
30 associated with a pilot that is not included in the *General Handoff Direction*
31 *Message*.
- 32 • When the mobile station processes the *Supplemental Channel Assignment Message*
33 it shall follow the following rules:
 - 34 - If FOR_SUP_CONFIG_r is equal to '10' or '11', the mobile station shall update the
35 Forward Supplemental Code Channels for each pilot in the Active Set.
 - 36 - If the pilot is not listed in the *Supplemental Channel Assignment Message*, the
37 mobile station shall delete all occurrences of Forward Supplemental Code
38 Channels associated with the pilot from the Code Channel List.

- 1 - If a pilot is listed in the *Supplemental Channel Assignment Message*, then the
2 mobile station shall set the Forward Supplemental Code Channels (associated
3 with the pilot) in the CODE_CHAN_LIST_s to the Forward Supplemental Code
4 Channels specified in the *Supplemental Channel Assignment Message*.
- 5 - If FOR_SUP_CONFIG_r is equal to '00' or '01', the mobile station shall not update
6 Supplemental Code Channels associated with the pilots included in the
7 *Supplemental Channel Assignment Message*.

1 No text.

2

1 6.7 Signaling Formats

2 This section describes the messages sent by the mobile station.

3 Some bits in the following message formats are marked as RESERVED. These bits allow for
4 extensions to the basic message for future features and capabilities. The mobile station
5 sets all reserved bits to '0'.

6 All messages have a set of acknowledgment fields. These fields are ACK_SEQ, MSG_SEQ,
7 ACK_REQ, and VALID_ACK for Access Channel messages and ACK_SEQ, MSG_SEQ, and
8 ACK_REQ for Reverse Traffic Channel messages.

9 In any multi-bit field of a signaling message, the most significant bit shall be transmitted
10 first.

11 6.7.1 Access Channel

12 This section describes the messages sent by the mobile station on the Access Channel
13 (see 6.1.3.2).

14 6.7.1.1 Access Channel Structure

15 An Access Channel slot is $(3 + \text{MAX_CAP_SZ}) + (1 + \text{PAM_SZ})$ Access Channel frames in
16 length. An Access Channel slot begins and ends on an Access Channel frame boundary.
17 Access Channel slots begin at Access Channel frames, in which

$$18 \quad t \bmod (4 + \text{MAX_CAP_SZ} + \text{PAM_SZ}) = 0,$$

19 where t is the System Time in frames. Note that all Access Channels associated with a
20 particular Paging Channel have the same slot size, and that all of the slots begin at the
21 same time. Figure 6.7.1.1-1 shows an example of Access Channel slots. Figure 6.7.1.1-2
22 shows the Access Channel structure.

23 The Access Channel slot length may differ from base station to base station. A mobile
24 station shall determine the beginning and length of the Access Channel slot, prior to
25 transmission.

26 An Access Channel transmission consists of the Access Channel preamble and the Access
27 Channel Message capsule. An Access Channel transmission shall be an integer number of
28 Access Channel frames in length, and shall not exceed $4 + \text{MAX_CAP_SZ} + \text{PAM_SZ}$ Access
29 Channel frames in length.

30 On each Access Channel transmission, the mobile station shall transmit a preamble
31 consisting of frames of 96 zeros (see 6.1.3.2.2.1), starting at the beginning of the slot (plus
32 PN randomization, as specified in 6.6.3.1.1.2) and $1 + \text{PAM_SZ}$ Access Channel frames in
33 length. The mobile station shall transmit an Access Channel Message capsule, immediately
34 following the preamble.

35

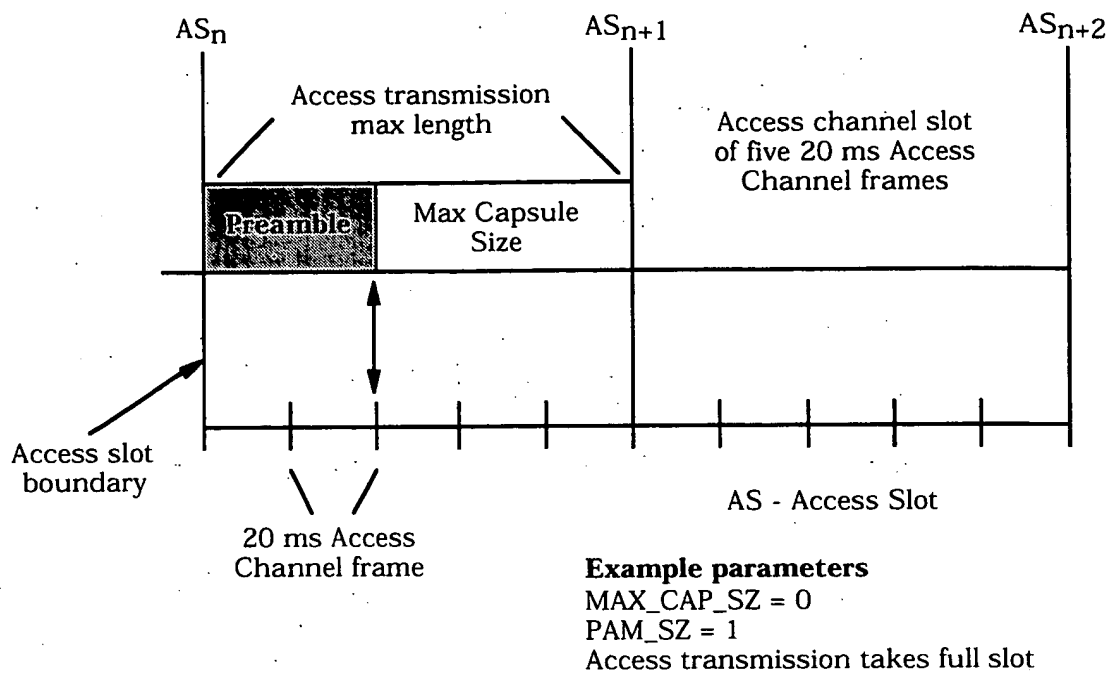


Figure 6.7.1.1-1. Example of Access Channel Slot Structure

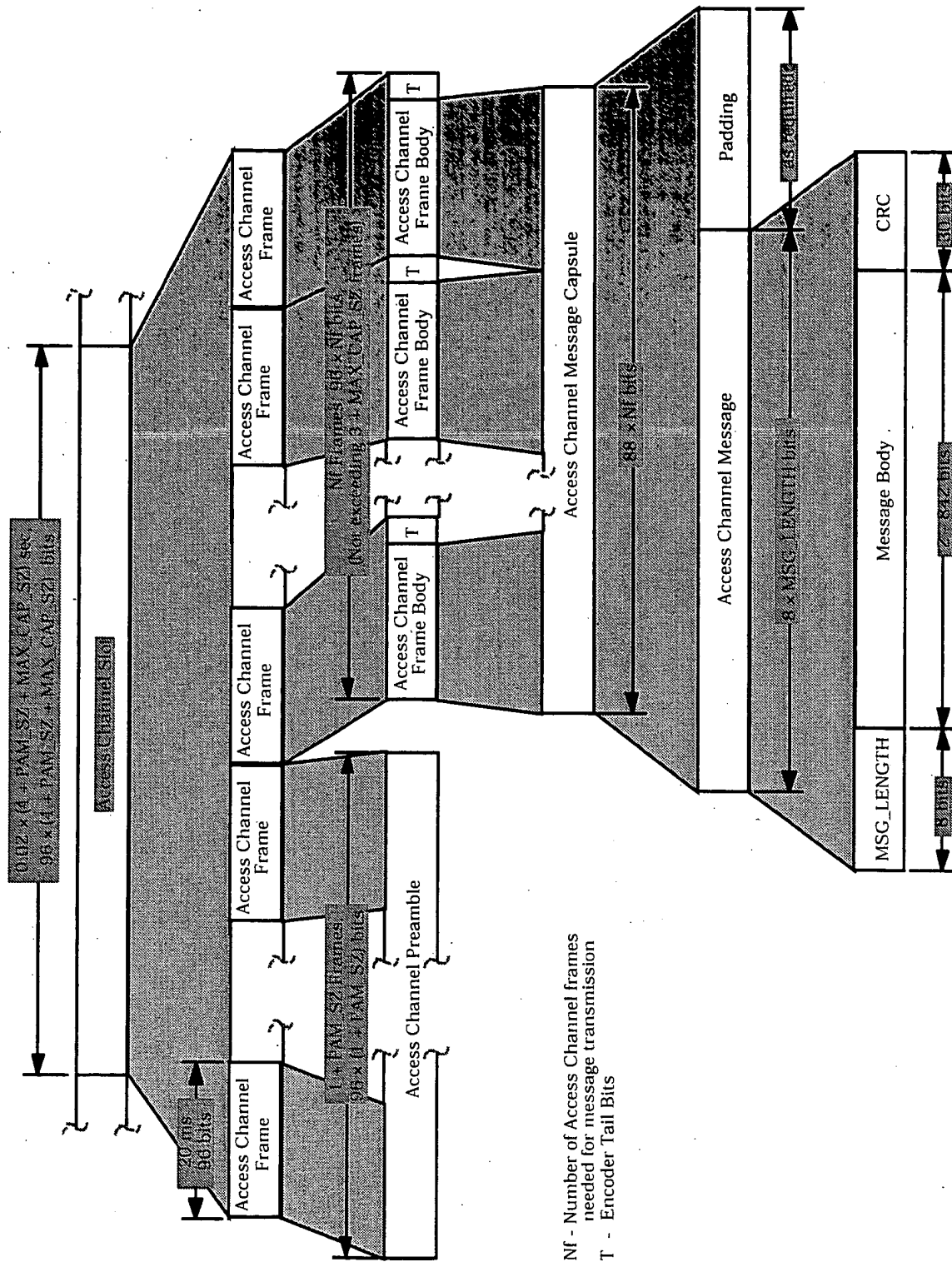


Figure 6.7.1.1-2. Access Channel Structure

6.7.1.2 Access Channel Message Structure

An *Access Channel Message* capsule consists of an *Access Channel Message* and padding, as shown in Figure 6.7.1.2-1. The length of the *Access Channel Message* capsule shall be an integer number of Access Channel frames given by

$$CAP_SZ = \left\lceil \frac{8 + \text{Message Body Length} + 30}{88} \right\rceil$$

Each *Access Channel Message* shall consist of a length field (MSG_LENGTH), a message body, and a CRC, in that order. The message body size shall be selected so that CAP_SZ does not exceed 3 + MAX_CAP_SZ. The mobile station shall transmit the *Access Channel Message*, immediately following the preamble.

The mobile station shall transmit padding, consisting of zero or more '0' bits immediately following the *Access Channel Message*. The length of the padding shall be such that

$$8 + \text{Message Body Length} + 30 + \text{Padding Length} = 88 \times CAP_SZ.$$

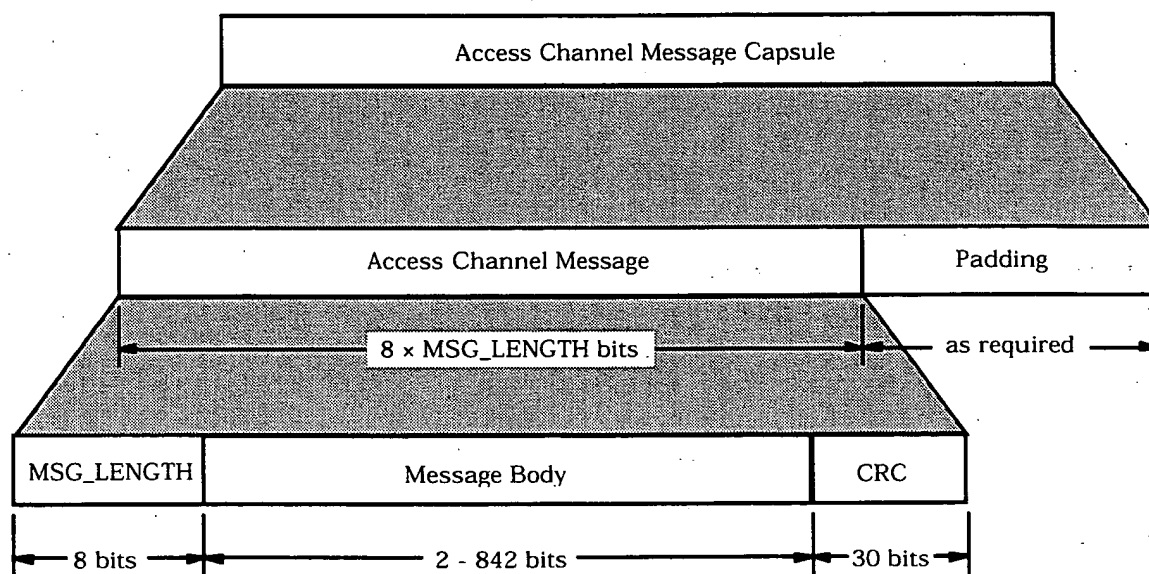


Figure 6.7.1.2-1. Access Channel Message Structure

6.7.1.2.1 Access Channel MSG_LENGTH Field

The mobile station shall set the MSG_LENGTH field of each Access Channel signaling message to the length of the message in octets, including the MSG_LENGTH field, the message body, and the CRC, but not including the preamble or the padding. The MSG_LENGTH field shall be 8 bits in length. Consistent with a maximum MAX_CAP_SZ value of 7, the mobile station shall limit the maximum *Access Channel Message* length to 110 octets, or 880 bits; that is, the value of the MSG_LENGTH field shall not exceed 110.

6.7.1.2.2 Access Channel Message CRC

A 30-bit CRC shall be computed for each Access Channel signaling message. The CRC shall include the MSG_LENGTH field and the message body. The generator polynomial for the CRC shall be as follows:

$$g(x) = x^{30} + x^{29} + x^{21} + x^{20} + x^{15} + x^{13} + x^{12} + x^{11} + x^8 + x^7 + x^6 + x^2 + x + 1.$$

The CRC shall be the value computed by the following procedure and the logic shown in Figure 6.7.1.2.2-1:

- All shift register elements shall be initialized to logical one.¹
- The switches shall be set in the up position.
- The information bit count k shall be defined as 8 + message body length in bits.
- The register shall be clocked k times, with the length and message body of the message as the k input bits.
- The switches shall be set in the down position so that the output is a modulo-2 addition with a '1' and the successive shift register inputs are '0'.
- The register shall be clocked an additional 30 times.
- The 30 additional output bits shall be the CRC field.
- The bits shall be transmitted in the order in which they appear at the output of the CRC encoder.

¹ Initialization of the register to ones causes the CRC for all-zero data to be non-zero.

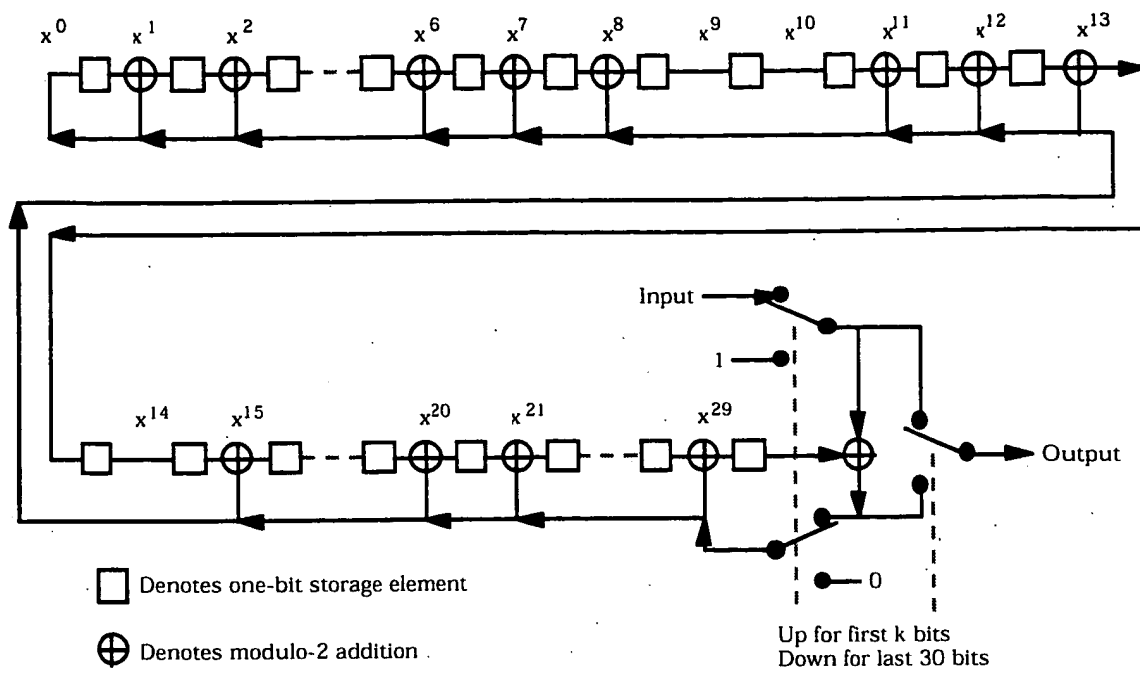


Figure 6.7.1.2.2-1. Access Channel CRC Calculation

6.7.1.3 Access Channel Message Body Format

The messages sent on the Access Channel are summarized in Table 6.7.1.3-1.

Table 6.7.1.3-1. Access Channel Messages

| Message Name | Message Type (binary) | Section Number |
|--|-----------------------|----------------|
| <i>Registration Message</i> | 00000001 | 6.7.1.3.2.1 |
| <i>Order Message</i> | 00000010 | 6.7.1.3.2.2 |
| <i>Data Burst Message</i> | 00000011 | 6.7.1.3.2.3 |
| <i>Origination Message</i> | 00000100 | 6.7.1.3.2.4 |
| <i>Page Response Message</i> | 00000101 | 6.7.1.3.2.5 |
| <i>Authentication Challenge Response Message</i> | 00000110 | 6.7.1.3.2.6 |
| <i>Status Response Message</i> | 00000111 | 6.7.1.3.2.7 |
| <i>TMSI Assignment Completion Message</i> | 00001000 | 6.7.1.3.2.8 |
| <i>PACA Cancel Message</i> | 00001001 | 6.7.1.3.2.9 |
| <i>Extended Status Response Message</i> | 00001010 | 6.7.1.3.2.10 |

6.7.1.3.1 Common Fields

6.7.1.3.1.1 Common Layer 2 and Identification Fields

All Access Channel messages share the following eight fields:

ACK_SEQ - Acknowledgment sequence number.

The mobile station shall set this field to the value of the MSG_SEQ field from the most recently received Paging Channel message requiring acknowledgment. If no such message has been received, the mobile station shall set this field to '111'. See 6.6.2.1.2.

MSG_SEQ - Message sequence number.

The mobile station shall set this field to the message sequence number for this message. See 6.6.3.1.2.

ACK_REQ - Acknowledgment required indicator. This field indicates whether this message requires an acknowledgment. The mobile station shall set the ACK_REQ field of all messages sent on the Access Channel to '1'.

- 1 **VALID_ACK** - Valid acknowledgment indicator.
- 2 To acknowledge a Paging Channel message, the mobile station
- 3 shall set this field to '1'; otherwise, the mobile station shall set
- 4 this field to '0'. See 6.6.2.1.2.
- 5 **ACK_TYPE** - Acknowledgment address type.
- 6 The mobile station shall set this field to the value of the
- 7 ADDR_TYPE field, if present, from the most recently received
- 8 Paging Channel message requiring acknowledgment. If the
- 9 Paging Channel message contained no ADDR_TYPE field, or if
- 10 no such message has been received, the mobile station shall
- 11 set this field to '000'.
- 12 **MSID_TYPE** - Mobile station identifier field type.
- 13 The mobile station shall set this field to the value shown in
- 14 Table 6.7.1.3.1.1-1 corresponding to the address type used by
- 15 the mobile station.

Table 6.7.1.3.1.1-1. Address Types

| Description | MSID_TYPE (binary) | MSID_LEN (octets) |
|--|-------------------------------|------------------------------|
| IMSI_S and ESN (Band Class 0 only) | 000 | 9 |
| ESN | 001 | 4 |
| IMSI | 010 | 5 to 7 |
| IMSI and ESN | 011 | 9 to 11 |
| TMSI | 101 | 2 to 12 |
| All other MSID_TYPE values are reserved. | | |

- 18
- 19 **MSID_LEN** - Mobile station identifier field length.
- 20 The mobile station shall set this field to the number of octets
- 21 included in the MSID field, as shown in Table 6.7.1.3.1.1-1.
- 22 **MSID** - Mobile station identifier.
- 23 The mobile station shall set this field to the mobile station
- 24 identifier, using the identifier type specified in the MSID_TYPE
- 25 field.
- 26

If MSID_TYPE is equal to '000', the MSID field shall consist of the following subfields:

| Subfield | Length (bits) |
|----------|---------------|
| MIN1 | 24 |
| MIN2 | 10 |
| ESN | 32 |
| RESERVED | 6 |

If MSID_TYPE is equal to '001', the MSID field shall consist of the following subfield:

| Subfield | Length (bits) |
|----------|-----------------------------|
| ESN | $8 \times \text{MSID_LEN}$ |

If MSID_TYPE is equal to '010', the MSID field shall consist of the following subfields:

| Subfield | Length (bits) |
|-------------------------------|---------------------------------------|
| IMSI_CLASS | 1 |
| IMSI class specific subfields | $7 + 8 \times (\text{MSID_LEN} - 1)$ |

If MSID_TYPE is equal to '011', the MSID field shall consist of the following subfields:

| Subfield | Length (bits) |
|-------------------------------|---------------------------------------|
| ESN | 32 |
| IMSI_CLASS | 1 |
| IMSI class specific subfields | $7 + 8 \times (\text{MSID_LEN} - 5)$ |

If MSID_TYPE is equal to '101', the MSID field shall consist of the following subfields:

| Subfield | Length (bits) |
|----------------|---|
| TMSI_ZONE | If MSID_LEN is greater than four, $8 \times (\text{MSID_LEN} - 4)$; otherwise, 0. |
| TMSI_CODE_ADDR | If MSID_LEN is greater than four, 32; otherwise, $8 \times \text{MSID_LEN}$. |

If the MSID_TYPE is equal to '000', the mobile station shall include the following four sub-fields in the MSID field:

- MIN1 - First part (least significant 24 bits) of the mobile identification number (MIN).
The mobile station shall set this field to IMSI_M_S1 (see 6.3.1).
- MIN2 - Second part (most significant 10 bits) of the mobile identification number (MIN).
The mobile station shall set this field to IMSI_M_S2 (see 6.3.1).
- ESN - Mobile station's electronic serial number.
The mobile station shall set this field to its electronic serial number. See 6.3.2.
- RESERVED - Reserved bits.
The mobile station shall set this field to '000000'.

If the MSID_TYPE is equal to '001', the mobile station shall include the following sub-fields in the MSID field:

- ESN - Mobile station's electronic serial number.
The mobile station shall set this field to its electronic serial number. See 6.3.2.

If the MSID_TYPE is equal to '010', the mobile station shall include the following sub-fields in the MSID field:

- IMSI_CLASS - If the mobile station has been assigned a class 0 IMSI, the mobile station shall set this field to '0'; otherwise, the mobile station shall set this field to '1'.
- IMSI class specific subfields - IMSI class specific subfields.
The mobile station shall set this field to the appropriate class specific subfields as described below.

If the MSID_TYPE is equal to '011', the mobile station shall include the following sub-fields in the MSID field:

- ESN - Mobile station's electronic serial number.
The mobile station shall set this field to its electronic serial number. See 6.3.2.
- IMSI_CLASS - If the mobile station has been assigned a class 0 IMSI, the mobile station shall set this field to '0'; otherwise, the mobile station shall set this field to '1'.
- IMSI class specific subfields - IMSI class specific subfields.
The mobile station shall set this field to the appropriate class specific subfields as described below:

If IMSI_CLASS is equal to '0', the mobile station shall use the IMSI class specific subfields shall be used:

| IMSI Class Specific Subfield | Length (bits) |
|--------------------------------------|-------------------------|
| IMSI_CLASS_0_TYPE | 2 |
| IMSI class 0 type specific subfields | see Table 6.7.1.3.1.1-2 |

If IMSI_CLASS is equal to '1', the mobile station shall use the following IMSI class specific subfields shall be used:

| IMSI Class Specific Subfield | Length (bits) |
|--------------------------------------|-------------------------|
| IMSI_CLASS_1_TYPE | 1 |
| IMSI class 1 type specific subfields | see Table 6.7.1.3.1.1-3 |

If MSID_TYPE is equal to '101', the mobile station shall include the following sub-field in the MSID sub-fields:

TMSI_ZONE - TMSI zone.

If MSID_LEN is greater than four, the mobile station shall set this field to the ASSIGNING_TMSI_ZONE_LEN_{s-p} most significant octets of ASSIGNING_TMSI_ZONE_{s-p}, the assigning TMSI zone. If MSID_LEN is less than or is equal to four, the mobile station shall omit this field.

TMSI_CODE_ADDR - Temporary mobile station identity code address.

If TMSI_ZONE is included in the address, the mobile station shall set this field to the 32-bit TMSI code assigned to the mobile station.

If TMSI_ZONE is not included in the address, the mobile station shall set this field as follows:

- If the most significant octet of the TMSI_CODE assigned to the mobile station is equal to '00000000' and the second most significant octet of the TMSI_CODE assigned to the mobile station is not equal to '00000000', the mobile station shall set TMSI_CODE_ADDR to the 24 least significant bits of the TMSI_CODE assigned to the mobile station.
- If the two most significant octets of the TMSI_CODE assigned to the mobile station are both equal to '00000000', the mobile station shall set TMSI_CODE_ADDR to the 16 least significant bits of the TMSI_CODE assigned to the mobile station.

- In all other cases, the mobile station shall set TMSI_CODE_ADDR to the TMSI_CODE assigned to the mobile station.

If IMSI_CLASS is equal to '0', the mobile station shall include the following fields in the IMSI class specific subfields:

- IMSI_CLASS_0_TYPE - The mobile station shall set this field as described in 6.6.2.1.5 (see Table 6.7.1.3.1.1-2).

Table 6.7.1.3.1.1-2: IMSI Class 0 Types

| Description | IMSI_CLASS_0_TYPE (binary) | Length of IMSI Class 0 Type Specific Subfields (bits) |
|--------------------------------------|-------------------------------|--|
| IMSI_S included | 00 | 37 |
| IMSI_S and IMSI_11_12 included | 01 | 45 |
| IMSI_S and MCC included | 10 | 45 |
| IMSI_S, IMSI_11_12; and MCC included | 11 | 53 |

- IMSI class 0 type - IMSI class 0 type specific subfields.
- specific subfields The mobile station shall set the IMSI class 1 type specific subfields as described below:

If IMSI_CLASS is equal to '1', the mobile station shall include the following fields in the IMSI class specific subfields:

If IMSI_CLASS is equal to '0', and IMSI_CLASS_0_TYPE is equal to '00', then IMSI class 0 type specific subfields shall consist of:

| IMSI Class 0 Type Specific Subfield | Length (bits) |
|-------------------------------------|---------------|
| RESERVED | 3 |
| IMSI_S | 34 |

If IMSI_CLASS is equal to '0', and IMSI_CLASS_0_TYPE is equal to '01', then IMSI class 0 type specific subfields shall consist of:

| IMSI Class 0 Type Specific Subfield | Length (bits) |
|-------------------------------------|---------------|
| RESERVED | 4 |
| IMSI_11_12 | 7 |
| IMSI_S | 34 |

If IMSI_CLASS is equal to '0', and IMSI_CLASS_0_TYPE is equal to '10', then IMSI class 0 type specific subfields shall consist of:

| IMSI Class 0 Type Specific Subfield | Length (bits) |
|-------------------------------------|---------------|
| RESERVED | 1 |
| MCC | 10 |
| IMSI_S | 34 |

If IMSI_CLASS is equal to '0', and IMSI_CLASS_0_TYPE is equal to '11', then IMSI class 0 type specific subfields shall consist of:

| IMSI Class 0 Type Specific Subfield | Length (bits) |
|-------------------------------------|---------------|
| RESERVED | 2 |
| MCC | 10 |
| IMSI_11_12 | 7 |
| IMSI_S | 34 |

IMSI_CLASS_1_TYPE – The mobile station shall set this field as described in 6.6.2.1.5 (see Table 6.7.1.3.1.1-3).

Table 6.7.1.3.1.1-3. IMSI Class 1 Types

| Description | IMSI_CLASS_1_TYPE (binary) | Length of IMSI Class 1 Type Specific Subfields (bits) |
|---|---------------------------------------|--|
| IMSI_S and IMSI_11_12 included | 0 | 46 |
| IMSI_S, IMSI_11_12, and MCC included | 1 | 54 |

IMSI class 1 type – IMSI class 1 type specific subfields.

specific subfields The mobile station shall set the IMSI class 1 type specific subfields as described below:

If IMSI_CLASS is equal to '1', and IMSI_CLASS_1_TYPE is equal to '0', then IMSI class 1 type specific subfields shall consist of:

| IMSI Class 1 Type Specific Subfield | Length (bits) |
|--|----------------------|
| RESERVED | 2 |
| IMSI_ADDR_NUM | 3 |
| IMSI_11_12 | 7 |
| IMSI_S | 34 |

If IMSI_CLASS is equal to '1', and IMSI_CLASS_1_TYPE is equal to '1', then IMSI class 1 type specific subfields shall consist of:

| IMSI Class 1 Type Specific Subfield | Length (bits) |
|--|----------------------|
| IMSI_ADDR_NUM | 3 |
| MCC | 10 |
| IMSI_11_12 | 7 |
| IMSI_S | 34 |

If IMSI_CLASS is equal to '0', and IMSI_CLASS_0_TYPE is equal to '00', the mobile station shall include the following fields in IMSI class 0 type specific subfields:

RESERVED – Reserved bits.

The mobile station shall set these bits to '000'.

IMSI_S – Last ten digits of the IMSI.

The mobile station shall set this field to IMSI_S. See 6.3.1.

1 If IMSI_CLASS is equal to '0', and IMSI_CLASS_0_TYPE is equal to '01', the mobile station
2 shall include the following fields in IMSI class 0 type specific subfields:

- 3 RESERVED - Reserved bits.
4 The mobile station shall set these bits to '0000'.
- 5 IMSI_11_12 - The 11th and 12th digits of IMSI.
6 The mobile station shall set this field to IMSI_11_12.
7 See 6.3.1.
- 8 IMSI_S - Last ten digits of the IMSI.
9 The mobile station shall set this field to IMSI_S. See 6.3.1.

10 If IMSI_CLASS is equal to '0', and IMSI_CLASS_0_TYPE is equal to '10', the mobile station
11 shall include the following fields in IMSI class 0 type specific subfields:

- 12 RESERVED - Reserved bit.
13 The mobile station shall set this bit to '0'.
- 14 MCC - Mobile Ccountry Code.
15 The mobile station shall set this field to the MCC. See 6.3.1.
- 16 IMSI_S - Last ten digits of the IMSI.
17 The mobile station shall set this field to IMSI_S. See 6.3.1.

18 If IMSI_CLASS is equal to '0', and IMSI_CLASS_0_TYPE is equal to '11', the mobile station
19 shall include the following fields in IMSI class 0 type specific subfields:

- 20 RESERVED - Reserved bits.
21 The mobile station shall set these bits to '00'.
- 22 MCC - Mobile Ccountry Code.
23 The mobile station shall set this field to the MCC. See 6.3.1.
- 24 IMSI_11_12 - The 11th and 12th digits of IMSI.
25 The mobile station shall set this field to IMSI_11_12.
26 See 6.3.1.
- 27 IMSI_S - Last ten digits of the IMSI.
28 The mobile station shall set this field to IMSI_S. See 6.3.1.

29 If IMSI_CLASS is equal to '1', and IMSI_CLASS_1_TYPE is equal to '0', the mobile station
30 shall include the following fields in IMSI class 1 type specific subfields:

- 31 RESERVED - Reserved bits.
32 The mobile station shall set these bits to '00'.
- 33 IMSI_ADDR_NUM - Number of IMSI address digits.
34 The mobile station shall set this field to four less than the
35 number of digits in the NMSI. See 6.3.1.
- 36 IMSI_11_12 - The 11th and 12th digits of IMSI.
37 The mobile station shall set this field to IMSI_11_12.
38 See 6.3.1.

1 IMSI_S - Last ten digits of the IMSI.

2 The mobile station shall set this field to IMSI_S. See 6.3.1.

3 If IMSI_CLASS is equal to '1', and IMSI_CLASS_1_TYPE is equal to '1', the mobile station
4 shall include the following fields in IMSI class 1 type specific subfields:

5 IMSI_ADDR_NUM - Number of IMSI address digits.

6 The mobile station shall set this field to four less than the
7 number of digits in the NMSI. See 6.3.1.

8 MCC - Mobile Ccountry Code.

9 The mobile station shall set this field to the MCC. See 6.3.1.

10 IMSI_11_12 - The 11th and 12th digits of IMSI.

11 The mobile station shall set this field to IMSI_11_12.
12 See 6.3.1.

13 IMSI_S - Last ten digits of the IMSI.

14 The mobile station shall set this field to IMSI_S. See 6.3.1.

15 6.7.1.3.1.2 Common Authentication Fields

16 Most Access Channel messages share the same four fields related to authentication:

17 AUTH_MODE - Authentication mode.

18 If authentication information is not available, or if the base
19 station has indicated that authentication is not required
20 (AUTH_s is set to '00'), the mobile station shall set this field to
21 '00'. If authentication is required by the base station and
22 authentication information is available, the mobile station
23 shall set this field to '01'. All other values are reserved.

24 AUTHR - Authentication data.

25 If the AUTH_MODE field is set to '01', the mobile station shall
26 set this field as specified in 6.3.12.1. If the AUTH_MODE field
27 is set to any other value, the mobile station shall omit this
28 field.

29 RANDC - Random challenge value.

30 If the AUTH_MODE field is set to '01', the mobile station shall
31 set this field as specified in 6.3.12.1. If the AUTH_MODE field
32 is set to any other value, the mobile station shall omit this
33 field.

34 COUNT - Call history parameter.

35 If the AUTH_MODE field is set to '01', the mobile station shall
36 set this field to the current value of the COUNT_{s-p} parameter.
37 If the AUTH_MODE field is set to any other value, the mobile
38 station shall omit this field.

6.7.1.3.1.3 Common Pilot Measurement Fields

Most Access Channel messages share the following fields related to reporting pilot strengths:

ACTIVE_PILOT- _STRENGTH

- Pilot strength.

The mobile station shall not include this field if $P_REV_IN_USE_s$ is less than or is equal to three. The mobile station shall include this field if $P_REV_IN_USE_s$ is greater than three. If this field is included, the mobile station shall set this field to

$$\lfloor -2 \times 10 \log_{10} PS \rfloor,$$

where PS is the strength of the pilot in the Active Set, measured as specified in 6.6.6.2.2. If this value ($\lfloor -2 \times 10 \log_{10} PS \rfloor$) is less than 0, the mobile station shall set this field to '000000'. If this value is greater than '111111', the mobile station shall set this field to '111111'.

FIRST_IS_ACTIVE

- The active pilot is the first pilot on which an access probe was sent.

The mobile station shall set this field to '1', if the pilot in the Active Set is the base station on which it began its access attempt. Otherwise, the mobile station shall set this field to '0'. See Table 6.7.1.3.1.3-1.

FIRST_IS_PTA

- The first pilot is the previous to the active pilot on which an access probe was sent.

The mobile station shall set this field to '1', if the first pilot is the previous to the active on which an access probe was sent. Otherwise, the mobile station shall set this field to '0'. See Table 6.7.1.3.1.3-1.

Table 6.7.1.3.1.3-1. Access Attempted Ordering Flags

| FIRST_IS_ACTIVE (binary) | FIRST_IS_PTA (binary) | Access Attempted Ordering |
|-----------------------------|--------------------------|---|
| 0 | 0 | The pilot listed in the Active Set is not the first attempted or the previous to active pilot attempted. The first pilot listed in the additional list of pilots is the first pilot attempted during the access attempt. The second pilot listed is previous to active. |
| 0 | 1 | The pilot listed in the Active Set is not the first attempted or the previous to active pilot attempted. The first pilot listed in the additional list of pilots is both the first attempted and the previous to active. |
| 1 | 0 | The pilot listed in the Active Set is the first pilot attempted. If the first additional pilot listed has the ACCESS_ATTEMPTED field equal to '1', then it is the previous to active. |
| 1 | 1 | Reserved |

NUM_ADD_PILOTS - Number of additional reported pilots.

The mobile station shall not include this field if P_REV_IN_USE_s is less than or equal to three. The mobile station shall include this field if P_REV_IN_USE_s is greater than three. If this field is included, the mobile station shall set this field to the number of pilots other than the pilot in the Active Set being reported. The mobile station shall report pilots which are in the ACCESS_HO_LIST and OTHER_REPORTED_LIST as described in 6.6.3.1.7.

If P_REV_IN_USE_s is greater than three, the mobile station shall include NUM_ADD_PILOTS occurrences of the following four-field record (one for each additional pilot being reported).

PILOT_PN_PHASE - Pilot measured phase.

The mobile station shall set this field to the phase of the pilot PN sequence, relative to the zero offset pilot PN sequence of this pilot, in units of one PN chip, as specified in 6.6.6.2.4.

PILOT_STRENGTH - Pilot strength.

The mobile station shall set this field to

$$[-2 \times 10 \log_{10} PS],$$

where PS is the strength of this pilot, measured as specified in 6.6.6.2.2. If this value ($[-2 \times 10 \log_{10} PS]$) is less than 0, the mobile station shall set this field to '000000'. If this value is greater than '111111', the mobile station shall set this field to '111111'.

- 1 ACCESS_HO_EN - Access handoff enable.
2 If the pilot is in ACCESS_HO_LIST, the mobile station shall
3 set this field to '1'; otherwise, the mobile station shall set this
4 field to '0'.
5 ACCESS_ATTEMPTED - Access attempted flag.
6 The mobile station shall set this field to '1', if an access probe
7 has been sent on this pilot within the current access attempt;
8 otherwise, the mobile station shall set this field to '0'.

9 6.7.1.3.2 Message Body Contents

- 10 The following sections specify the contents of the message body for each message that may
11 be sent on the Access Channel:

1 6.7.1.3.2.1 Registration Message

- 2 When the mobile station sends a *Registration Message*, it shall use the following variable-
- 3 length message format:

| Field | Length (bits) |
|-----------------------|---------------|
| MSG_TYPE ('00000001') | 8 |
| ACK_SEQ | 3 |
| MSG_SEQ | 3 |
| ACK_REQ | 1 |
| VALID_ACK | 1 |
| ACK_TYPE | 3 |
| MSID_TYPE | 3 |
| MSID_LEN | 4 |
| MSID | 8 × MSID_LEN |
| AUTH_MODE | 2 |
| AUTHR | 0 or 18 |
| RANDC | 0 or 8 |
| COUNT | 0 or 6 |
| REG_TYPE | 4 |
| SLOT_CYCLE_INDEX | 3 |
| MOB_P_REV | 8 |
| SCM | 8 |
| MOB_TERM | 1 |
| RETURN_CAUSE | 4 |
| ACTIVE_PILOT_STRENGTH | 6 |
| FIRST_IS_ACTIVE | 1 |
| FIRST_IS_PTA | 1 |
| NUM_ADD_PILOTS | 3 |

NUM_ADD_PILOTS occurrences of the following record:

| | |
|------------------|----|
| PILOT_PN_PHASE | 15 |
| PILOT_STRENGTH | 6 |
| ACCESS_HO_EN | 1 |
| ACCESS_ATTEMPTED | 1 |

| | |
|----------|-------------------|
| RESERVED | 0 - 7 (as needed) |
|----------|-------------------|

| | | | |
|----|-----------|---|---|
| 1 | MSG_TYPE | - | Message type. |
| 2 | | | The mobile station shall set this field to '00000001'. |
| 3 | ACK_SEQ | - | Acknowledgment sequence number. |
| 4 | | | See 6.7.1.3.1.1. |
| 5 | MSG_SEQ | - | Message sequence number. |
| 6 | | | See 6.7.1.3.1.1. |
| 7 | ACK_REQ | - | Acknowledgment required indicator. |
| 8 | | | See 6.7.1.3.1.1. |
| 9 | VALID_ACK | - | Valid acknowledgment indicator. |
| 10 | | | See 6.7.1.3.1.1. |
| 11 | ACK_TYPE | - | Acknowledgment address type. |
| 12 | | | See 6.7.1.3.1.1. |
| 13 | MSID_TYPE | - | Mobile station identifier field type. |
| 14 | | | See 6.7.1.3.1.1. |
| 15 | MSID_LEN | - | Mobile station identifier field length. |
| 16 | | | See 6.7.1.3.1.1. |
| 17 | MSID | - | Mobile station identifier. |
| 18 | | | See 6.7.1.3.1.1. |
| 19 | AUTH_MODE | - | Authentication mode. |
| 20 | | | See 6.7.1.3.1.2. |
| 21 | AUTHR | - | Authentication data. |
| 22 | | | See 6.7.1.3.1.2. |
| 23 | RANDC | - | Random challenge value. |
| 24 | | | See 6.7.1.3.1.2. |
| 25 | COUNT | - | Call history parameter. |
| 26 | | | See 6.7.1.3.1.2. |
| 27 | REG_TYPE | - | Registration type. |
| 28 | | | This field indicates which type of event generated the |
| 29 | | | registration attempt. |
| 30 | | | The mobile station shall set this field to the REG_TYPE value |
| 31 | | | shown in Table 6.7.1.3.2.1-1 corresponding to the event that |
| 32 | | | caused this registration to occur (see 6.6.5.1). |
| 33 | | | |

Table 6.7.1.3.2.1-1. Registration Type (REG_TYPE) Codes

| REG_TYPE (binary) | Type of Registration |
|---|----------------------------------|
| 0000 | Timer-based (see 6.6.5.1.3) |
| 0001 | Power-up (see 6.6.5.1.1) |
| 0010 | Zone-based (see 6.6.5.1.5) |
| 0011 | Power-down (see 6.6.5.1.2) |
| 0100 | Parameter-change (see 6.6.5.1.6) |
| 0101 | Ordered (see 6.6.5.1.7) |
| 0110 | Distance-based (see 6.6.5.1.4) |
| All other REG_TYPE values are reserved. | |

SLOT_CYCLE_INDEX – Slot cycle index.

If the mobile station is configured for slotted mode operation, the mobile station shall set this field to the preferred slot cycle index, SLOT_CYCLE_INDEX_p (see 6.6.2.1.1). Otherwise, the mobile station shall set this field to '000'.

MOB_P_REV – Protocol revision of the mobile station.

The mobile station shall set this field to '00000100' or '00000101'.²

SCM – Station class mark.

The mobile station shall set this field to its station class mark. See 6.3.3.

MOB_TERM – Mobile terminated calls accepted indicator.

If the mobile station is configured to accept mobile terminated calls while operating with the current roaming status (see 6.6.5.3), the mobile station shall set this bit to '1'. Otherwise, the mobile station shall set this bit to '0'.

RETURN_CAUSE – Reason of the mobile station registration or access.

The mobile station shall set this field to the RETURN_CAUSE value shown in Table 6.7.1.3.2.1-2 corresponding to the service redirection failure condition (see 6.6.1.1).

² A protocol revision of '00000101' indicates that the mobile station complies with all of the requirements (per use of "shall") specified in this document. A protocol revision of '00000100' indicates that the mobile station complies with all of the requirements (per use of "shall") specified in this document, except those pertaining to one or more of the following: PACA, Power Up Function, mobile-assisted hard handoff, and analog TIA/EIA-553-A compatibility.

Table 6.7.1.3.2.1-2. RETURN_CAUSE Codes

| RETURN_CAUSE (binary) | Redirect Failure Condition |
|---|---|
| 0000 | Normal access. |
| 0001 | Service redirection failed as a result of system not found. |
| 0010 | Service redirection failed as a result of protocol mismatch. |
| 0011 | Service redirection failed as a result of registration rejection. |
| 0100 | Service redirection failed as a result of wrong SID. |
| 0101 | Service redirection failed as a result of wrong NID. |
| All other RETURN_CAUSE values are reserved. | |

ACTIVE_PILOT_
STRENGTH

- Pilot strength.
- See 6.7.1.3.1.3.

FIRST_IS_ACTIVE

- The active pilot is the first pilot on which an access probe was sent.
- See 6.7.1.3.1.3.

FIRST_IS_PTA

- The first pilot is the previous to the active pilot on which an access probe was sent.
- See 6.7.1.3.1.3.

NUM_ADD_PILOTS

- Number of additional reported pilots.
- If PILOT_REPORT_s equals to '1', see 6.7.1.3.1.3. If PILOT_REPORT_s equals to '0', the mobile station shall set this field to '000'.

The mobile station shall include NUM_ADD_PILOTS occurrences of the following four-field record (one for each additional pilot being reported). The mobile station shall report pilots which are in the ACCESS_HO_LIST and OTHER_REPORTED_LIST as described in 6.6.3.1.7.

PILOT_PN_PHASE

- Pilot measured phase.
- See 6.7.1.3.1.3.

PILOT_STRENGTH

- Pilot strength.
- See 6.7.1.3.1.3.

ACCESS_HO_EN

- Access handoff enable.
- See 6.7.1.3.1.3.

- | | | | |
|---|------------------|---|---|
| 1 | ACCESS_ATTEMPTED | - | Access attempted flag. |
| 2 | | | See 6.7.1.3.1.3. |
| 3 | RESERVED | - | Reserved bits. |
| 4 | | | The mobile station shall add reserved bits as needed in order |
| 5 | | | to make the length of the entire message equal to an integer |
| 6 | | | number of octets. The mobile station shall set these bits |
| 7 | | | to '0'. |

1 6.7.1.3.2.2 Order Message

- 2 When the mobile station sends an *Order Message* on the Access Channel, it shall use the
 3 following variable-length message format:

| Field | Length (bits) |
|---------------------------------|--------------------|
| MSG_TYPE ('00000010') | 8 |
| ACK_SEQ | 3 |
| MSG_SEQ | 3 |
| ACK_REQ | 1 |
| VALID_ACK | 1 |
| ACK_TYPE | 3 |
| MSID_TYPE | 3 |
| MSID_LEN | 4 |
| MSID | 8 × MSID_LEN |
| AUTH_MODE | 2 |
| ORDER | 6 |
| ADD_RECORD_LEN | 3 |
| Order-specific fields (if used) | 8 × ADD_RECORD_LEN |
| ACTIVE_PILOT_STRENGTH | 6 |
| FIRST_IS_ACTIVE | 1 |
| FIRST_IS_PTA | 1 |
| NUM_ADD_PILOTS | 3 |

NUM_ADD_PILOTS occurrences of the following record:

| | |
|------------------|----|
| PILOT_PN_PHASE | 15 |
| PILOT_STRENGTH | 6 |
| ACCESS_HO_EN | 1 |
| ACCESS_ATTEMPTED | 1 |

| | |
|----------|-------------------|
| RESERVED | 0 - 7 (as needed) |
|----------|-------------------|

- 4
 5 MSG_TYPE - Message type.
 6 The mobile station shall set this field to '00000010'.
 7 ACK_SEQ - Acknowledgment sequence number.
 8 See 6.7.1.3.1.1.

| | | | |
|----|-----------------------|---|--|
| 1 | MSG_SEQ | - | Message sequence number. |
| 2 | | | See 6.7.1.3.1.1. |
| 3 | ACK_REQ | - | Acknowledgment required indicator. |
| 4 | | | See 6.7.1.3.1.1. |
| 5 | VALID_ACK | - | Valid acknowledgment indicator. |
| 6 | | | See 6.7.1.3.1.1. |
| 7 | ACK_TYPE | - | Acknowledgment address type. |
| 8 | | | See 6.7.1.3.1.1. |
| 9 | MSID_TYPE | - | Mobile station identifier field type. |
| 10 | | | See 6.7.1.3.1.1. |
| 11 | MSID_LEN | - | Mobile station identifier field length. |
| 12 | | | See 6.7.1.3.1.1. |
| 13 | MSID | - | Mobile station identifier. |
| 14 | | | See 6.7.1.3.1.1. |
| 15 | AUTH_MODE | - | Authentication Mode. |
| 16 | | | The mobile station shall set this field to '00'. |
| 17 | ORDER | - | Order code. |
| 18 | | | The mobile station shall set this field to the ORDER code |
| 19 | | | (see 6.7.3) for this type of <i>Order Message</i> . |
| 20 | ADD_RECORD_LEN | - | Additional record length. |
| 21 | | | The mobile station shall set this field to the number of octets |
| 22 | | | in the order-specific fields included in this message. |
| 23 | order-specific fields | - | Order-specific fields. |
| 24 | | | The mobile station shall include order-specific fields as |
| 25 | | | specified in 6.7.3. |
| 26 | ACTIVE_PILOT- | | |
| 27 | STRENGTH | - | Pilot strength. |
| 28 | | | See 6.7.1.3.1.3. |
| 29 | FIRST_IS_ACTIVE | - | The active pilot is the first pilot on which an access probe was |
| 30 | | | sent. |
| 31 | | | See 6.7.1.3.1.3. |
| 32 | FIRST_IS_PTA | - | The first pilot is the previous to the active pilot on which an |
| 33 | | | access probe was sent. |
| 34 | | | See 6.7.1.3.1.3. |
| 35 | NUM_ADD_PILOTS | - | Number of additional reported pilots. |
| 36 | | | If PILOT_REPORT _s equals to '1', see 6.7.1.3.1.3. If |
| 37 | | | PILOT_REPORT _s equals to '0', the mobile station shall set this |
| 38 | | | field to '000'. |

1 The mobile station shall include NUM_ADD_PILOTS occurrences of the following four-field
2 record (one for each additional pilot being reported). The mobile station shall report pilots
3 which are in the ACCESS_HO_LIST and OTHER_REPORTED_LIST as described in
4 6.6.3.1.7.

5 PILOT_PN_PHASE - Pilot measured phase.

6 See 6.7.1.3.1.3.

7 PILOT_STRENGTH - Pilot strength.

8 See 6.7.1.3.1.3.

9 ACCESS_HO_EN - Access handoff enable.

10 See 6.7.1.3.1.3.

11 ACCESS_ATTEMPTED - Access attempted flag.

12 See 6.7.1.3.1.3.

13 RESERVED - Reserved bits.

14 The mobile station shall add reserved bits as needed in order
15 to make the length of the entire message equal to an integer
16 number of octets. The mobile station shall set these bits
17 to '0'.
18

6.7.1.3.2.3 Data Burst Message

When the mobile station sends a *Data Burst Message* on the Access Channel, it shall use the following variable-length message format:

| Field | Length (bits) |
|-----------------------|---------------|
| MSG_TYPE ('00000011') | 8 |
| ACK_SEQ | 3 |
| MSG_SEQ | 3 |
| ACK_REQ | 1 |
| VALID_ACK | 1 |
| ACK_TYPE | 3 |
| MSID_TYPE | 3 |
| MSID_LEN | 4 |
| MSID | 8 × MSID_LEN |
| AUTH_MODE | 2 |
| AUTHR | 0 or 18 |
| RANDC | 0 or 8 |
| COUNT | 0 or 6 |
| MSG_NUMBER | 8 |
| BURST_TYPE | 6 |
| NUM_MSGS | 8 |
| NUM_FIELDS | 8 |

NUM_FIELDS occurrences of the following field:

| | |
|-------|---|
| CHARi | 8 |
|-------|---|

| | |
|-----------------------|---|
| ACTIVE_PILOT_STRENGTH | 6 |
| FIRST_IS_ACTIVE | 1 |
| FIRST_IS_PTA | 1 |
| NUM_ADD_PILOTS | 3 |

NUM_ADD_PILOTS occurrences of the following record:

| | |
|------------------|----|
| PILOT_PN_PHASE | 15 |
| PILOT_STRENGTH | 6 |
| ACCESS_HO_EN | 1 |
| ACCESS_ATTEMPTED | 1 |

| | |
|----------|-------------------|
| RESERVED | 0 - 7 (as needed) |
|----------|-------------------|

| | | | |
|----|------------|---|---|
| 1 | MSG_TYPE | - | Message type. |
| 2 | | | The mobile station shall set this field to '00000011'. |
| 3 | ACK_SEQ | - | Acknowledgment sequence number. |
| 4 | | | See 6.7.1.3.1.1. |
| 5 | MSG_SEQ | - | Message sequence number. |
| 6 | | | See 6.7.1.3.1.1. |
| 7 | ACK_REQ | - | Acknowledgment required indicator. |
| 8 | | | See 6.7.1.3.1.1. |
| 9 | VALID_ACK | - | Valid acknowledgment indicator. |
| 10 | | | See 6.7.1.3.1.1. |
| 11 | ACK_TYPE | - | Acknowledgment address type. |
| 12 | | | See 6.7.1.3.1.1. |
| 13 | MSID_TYPE | - | Mobile station identifier field type. |
| 14 | | | See 6.7.1.3.1.1. |
| 15 | MSID_LEN | - | Mobile station identifier field length. |
| 16 | | | See 6.7.1.3.1.1. |
| 17 | MSID | - | Mobile station identifier. |
| 18 | | | See 6.7.1.3.1.1. |
| 19 | AUTH_MODE | - | Authentication mode. |
| 20 | | | See 6.7.1.3.1.2. |
| 21 | AUTHR | - | Authentication data. |
| 22 | | | See 6.7.1.3.1.2. |
| 23 | RANDC | - | Random challenge value. |
| 24 | | | See 6.7.1.3.1.2. |
| 25 | COUNT | - | Call history parameter. |
| 26 | | | See 6.7.1.3.1.2. |
| 27 | MSG_NUMBER | - | Message number within the data burst stream. |
| 28 | | | The mobile station shall set this field to the number of this |
| 29 | | | message within the data burst stream. |
| 30 | BURST_TYPE | - | Data burst type. |
| 31 | | | The mobile station shall set the value of this field for the type |
| 32 | | | of this data burst as defined in TSB58-A. If the mobile station |
| 33 | | | sets this field equal to '111110', it shall set the first two |
| 34 | | | CHAR _i fields of this message equal to |
| 35 | | | EXTENDED_BURST_TYPE_INTERNATIONAL as described in |
| 36 | | | the definition of CHAR _i below. If the mobile station sets this |
| 37 | | | field equal to '111111', it shall set the first two CHAR _i fields of |
| 38 | | | this message equal to the EXTENDED BURST TYPE as |
| 39 | | | described in the definition of CHAR _i below. |

1 NUM_MSGS - Number of messages in the data burst stream.

2 The mobile station shall set this field to the number of
3 messages within this data burst stream.

4 NUM_FIELDS - Number of characters in this message.

5 The mobile station shall set this field to the number of CHARi
6 fields included in this message.

7 CHARi - Character.

8 The mobile station shall include NUM_FIELDS occurrences of
9 this field. The mobile station shall set these fields to the
10 corresponding octet of the data burst stream.

11 If the BURST_TYPE field of this message is equal to '111110',
12 the first two CHARi octets shall represent a 16 bit
13 EXTENDED_BURST_TYPE_INTERNATIONAL field, which is
14 encoded as shown below. The first ten bits of this field
15 contain a binary mapping of the Mobile Country Code (MCC).
16 Encoding of the MCC shall be as specified in 6.3.1.3. The
17 remaining six bits of the
18 EXTENDED_BURST_TYPE_INTERNATIONAL field shall specify
19 the COUNTRY_BURST_TYPE. The mobile station shall set the
20 value of the COUNTRY_BURST_TYPE according to the type of
21 this data burst as defined in standards governed by the
22 country where this data burst type is to be used.

| Field | Length (bits) |
|------------------------|----------------------|
| Mobile Country Code | 10 |
| COUNTRY_BURST_TYPE | 6 |
| Remaining CHARi fields | 8 × (NUM_FIELDS - 2) |

24 If the BURST_TYPE field of this message is equal to '111111',
25 the first two CHARi octets shall represent a single, 16 bit,
26 EXTENDED_BURST_TYPE field, as shown below. The mobile
27 station shall set the value of the EXTENDED_BURST_TYPE
28 according to the type of this data burst as defined in
29 TSB58-A.

| Field | Length (bits) |
|---|----------------------|
| EXTENDED_BURST_TYPE (first two CHARi fields) | 16 |
| Remaining CHARi fields | 8 × (NUM_FIELDS - 2) |

| | | | |
|----|---|---|--|
| 1 | ACTIVE_PILOT- | | |
| 2 | _STRENGTH | - | Pilot strength. |
| 3 | | | See 6.7.1.3.1.3. |
| 4 | FIRST_IS_ACTIVE | - | The active pilot is the first pilot on which an access probe was |
| 5 | | | sent. |
| 6 | | | See 6.7.1.3.1.3. |
| 7 | FIRST_IS_PTA | - | The first pilot is the previous to the active pilot on which an |
| 8 | | | access probe was sent. |
| 9 | | | See 6.7.1.3.1.3. |
| 10 | NUM_ADD_PILOTS | - | Number of additional reported pilots. |
| 11 | | | If PILOT_REPORT _s equals to '1', see 6.7.1.3.1.3. If |
| 12 | | | PILOT_REPORT _s equals to '0', the mobile station shall set this |
| 13 | | | field to '000'. |
| 14 | The mobile station shall include NUM_ADD_PILOTS occurrences of the following four-field | | |
| 15 | record (one for each additional pilot being reported). The mobile station shall report pilots | | |
| 16 | which are in the ACCESS_HO_LIST and OTHER_REPORTED_LIST as described in | | |
| 17 | 6.6.3.1.7. | | |
| 18 | PILOT_PN_PHASE | - | Pilot measured phase. |
| 19 | | | See 6.7.1.3.1.3. |
| 20 | PILOT_STRENGTH | - | Pilot strength. |
| 21 | | | See 6.7.1.3.1.3. |
| 22 | ACCESS_HO_EN | - | Access handoff enable. |
| 23 | | | See 6.7.1.3.1.3. |
| 24 | ACCESS_ATTEMPTED | - | Access attempted flag. |
| 25 | | | See 6.7.1.3.1.3. |
| 26 | RESERVED | - | Reserved bits. |
| 27 | | | The mobile station shall add reserved bits as needed in order |
| 28 | | | to make the length of the entire message equal to an integer |
| 29 | | | number of octets. The mobile station shall set these bits |
| 30 | | | to '0'. |
| 31 | | | |

1 6.7.1.3.2.4 Origination Message

- 2 When the mobile station sends an *Origination Message*, it shall use the following variable-
- 3 length message format:

| Field | Length (bits) |
|-----------------------|-----------------------------|
| MSG_TYPE ('00000100') | 8 |
| ACK_SEQ | 3 |
| MSG_SEQ | 3 |
| ACK_REQ | 1 |
| VALID_ACK | 1 |
| ACK_TYPE | 3 |
| MSID_TYPE | 3 |
| MSID_LEN | 4 |
| MSID | $8 \times \text{MSID_LEN}$ |
| AUTH_MODE | 2 |
| AUTHR | 0 or 18 |
| RANDC | 0 or 8 |
| COUNT | 0 or 6 |
| MOB_TERM | 1 |
| SLOT_CYCLE_INDEX | 3 |
| MOB_P_REV | 8 |
| SCM | 8 |
| REQUEST_MODE | 3 |
| SPECIAL_SERVICE | 1 |
| SERVICE_OPTION | 0 or 16 |
| PM | 1 |
| DIGIT_MODE | 1 |
| NUMBER_TYPE | 0 or 3 |
| NUMBER_PLAN | 0 or 4 |

(continues on next page)

| Field | Length (bits) |
|-------------|---------------|
| MORE_FIELDS | 1 |
| NUM_FIELDS | 8 |

NUM_FIELDS occurrences of the following field:

| | |
|-------------------|--------|
| CHAR _i | 4 or 8 |
|-------------------|--------|

| | |
|----------------------|--------|
| NAR_AN_CAP | 1 |
| PACA_REORIG | 1 |
| RETURN_CAUSE | 4 |
| MORE_RECORDS | 1 |
| ENCRYPTION_SUPPORTED | 0 or 4 |
| PACA_SUPPORTED | 1 |
| NUM_ALT_SO | 3 |

NUM_ALT_SO occurrences of the following field:

| | |
|--------|----|
| ALT_SO | 16 |
|--------|----|

| | |
|-----------------------|---|
| ACTIVE_PILOT_STRENGTH | 6 |
| FIRST_IS_ACTIVE | 1 |
| FIRST_IS_PTA | 1 |
| NUM_ADD_PILOTS | 3 |

NUM_ADD_PILOTS occurrences of the following record:

| | |
|------------------|----|
| PILOT_PN_PHASE | 15 |
| PILOT_STRENGTH | 6 |
| ACCESS_HO_EN | 1 |
| ACCESS_ATTEMPTED | 1 |

| | |
|----------|-------------------|
| RESERVED | 0 - 7 (as needed) |
|----------|-------------------|

- MSG_TYPE - Message type.
 The mobile station shall set this field to '00000100'.
- ACK_SEQ - Acknowledgment sequence number.
 See 6.7.1.3.1.1.
- MSG_SEQ - Message sequence number.

| | | |
|----|------------------|--|
| 1 | | See 6.7.1.3.1.1. |
| 2 | ACK_REQ | - Acknowledgment required indicator. |
| 3 | | See 6.7.1.3.1.1. |
| 4 | VALID_ACK | - Valid acknowledgment indicator. |
| 5 | | See 6.7.1.3.1.1. |
| 6 | ACK_TYPE | - Acknowledgment address type. |
| 7 | | See 6.7.1.3.1.1. |
| 8 | MSID_TYPE | - Mobile station identifier field type. |
| 9 | | See 6.7.1.3.1.1. |
| 10 | MSID_LEN | - Mobile station identifier field length. |
| 11 | | See 6.7.1.3.1.1. |
| 12 | MSID | - Mobile station identifier. |
| 13 | | See 6.7.1.3.1.1. |
| 14 | AUTH_MODE | - Authentication mode. |
| 15 | | See 6.7.1.3.1.2. |
| 16 | AUTHR | - Authentication data. |
| 17 | | See 6.7.1.3.1.2. |
| 18 | RANDC | - Random challenge value. |
| 19 | | See 6.7.1.3.1.2. |
| 20 | COUNT | - Call history parameter. |
| 21 | | See 6.7.1.3.1.2. |
| 22 | MOB_TERM | - Mobile terminated calls accepted indicator. |
| 23 | | If the mobile station is configured to accept mobile terminated |
| 24 | | calls while operating with the current roaming status (see |
| 25 | | 6.6.5.3), the mobile station shall set this bit to '1'; otherwise, |
| 26 | | the mobile station shall set this bit to '0'. |
| 27 | SLOT_CYCLE_INDEX | - Slot cycle index. |
| 28 | | If the mobile station is configured for slotted mode operation, |
| 29 | | the mobile station shall set this field to the preferred slot cycle |
| 30 | | index, SLOT_CYCLE_INDEX _p (see 6.6.2.1.1); otherwise, the |
| 31 | | mobile station shall set this field to '000'. |

The mobile station shall set this field to '00000100' or '00000101'.³

The mobile station shall set this field to the station class mark of the mobile station. See 6.3.3.

Table 6.7.1.3.2.4-1. REQUEST_MODE Codes

| Value (binary) | Requested Mode |
|----------------|--|
| 000 | Reserved |
| 001 | CDMA only |
| 010 | Wide analog only |
| 011 | Either wide analog or CDMA only |
| 100 | Narrow analog only |
| 101 | Either narrow analog or CDMA only |
| 110 | Either narrow analog or wide analog only |
| 111 | Narrow analog or wide analog or CDMA |

To request a special service option, the mobile station shall set this field to '1'. To request the default service option (Service Option 1), the mobile station shall set this field to '0'.

If the SPECIAL_SERVICE field is set to '1', the mobile station shall set this field to the value specified in TSB58-A, corresponding to the requested service option. If the SPECIAL_SERVICE field is set to '0', the mobile station shall omit this field.

³ A protocol revision of '00000101' indicates that the mobile station complies with all of the requirements (per use of "shall") specified in this document. A protocol revision of '00000100' indicates that the mobile station complies with all of the requirements (per use of "shall") specified in this document, except those pertaining to one or more of the following: PACA, Power Up Function, mobile-assisted hard handoff, and analog TIA/EIA-553-A compatibility.

To request voice privacy, the mobile station shall set this field to '1'; otherwise, the mobile station shall set this field to '0'.

DIGIT_MODE - Digit mode indicator.

This field indicates whether the dialed digits are 4-bit DTMF codes or 8-bit ASCII codes using a specified numbering plan.

To originate the call using the binary representation of DTMF digits, the mobile station shall set this field to '0'. To originate the call using ASCII characters, the mobile station shall set this field to '1'.

NUMBER_TYPE - Type of number.

If the DIGIT_MODE field is set to '1', the mobile station shall set this field to the NUMBER_TYPE value shown in Table 6.7.1.3.2.4-2 corresponding to the type of the number as defined in ANSI T1.607-1990 §4.5.9. If the DIGIT_MODE field is set to '0', the mobile station shall omit this field.

Table 6.7.1.3.2.4-2. Number Types

| Description | NUMBER_TYPE (binary) |
|-------------------------|---------------------------------|
| Unknown | 000 |
| International number | 001 |
| National number | 010 |
| Network-specific number | 011 |
| Subscriber number | 100 |
| Reserved | 101 |
| Abbreviated number | 110 |
| Reserved for extension | 111 |

NUMBER_PLAN - Numbering plan.

If the DIGIT_MODE field is set to '1', the mobile station shall set this field to the NUMBER_PLAN value shown in Table 6.7.1.3.2.4-3 corresponding to the requested numbering plan as defined in ANSI T1.607-1990, Section 4.5.9. If the DIGIT_MODE field is set to '0', the mobile station shall omit this field.

Table 6.7.1.3.2.4-3. Numbering Plan Identification

| Description | NUMBER_PLAN (binary) |
|--|-------------------------|
| Unknown | 0000 |
| ISDN/Telephony numbering plan (CCITT E.164 and CCITT E.163) | 0001 |
| Data numbering plan (CCITT X.121) | 0011 |
| Telex numbering plan (CCITT F.69) | 0100 |
| Private numbering plan | 1001 |
| Reserved for extension | 1111 |
| All other NUMBER_PLAN codes are reserved. | |

MORE_FIELDS - More dialed digits indicator.

This field indicates whether additional dialed digits will be sent in a later *Origination Continuation Message*.

If all dialed digits will fit into this message, the mobile station shall set this field to '0'. If not, the mobile station shall set this field to '1'.

NUM_FIELDS - Number of dialed digits in this message.

The mobile station shall set this field to the number of dialed digits included in this message.

CHARi - A dialed digit or character.

The mobile station shall include NUM_FIELDS occurrences of this field. If the DIGIT_MODE field is set to '0', the mobile station shall set each occurrence of this field to the code value shown in Table 6.7.1.3.2.4-4 corresponding to the dialed digit. If the DIGIT_MODE field is set to '1', the mobile station shall set each occurrence of this field to the ASCII representation corresponding to the dialed digit, as specified in ANSI X3.4, with the most significant bit set to '0'.

Table 6.7.1.3.2.4-4. Representation of DTMF Digits

| Digit | Code (binary) | Digit | Code (binary) |
|-------------------------------|---------------|-------|---------------|
| 1 | 0001 | 7 | 0111 |
| 2 | 0010 | 8 | 1000 |
| 3 | 0011 | 9 | 1001 |
| 4 | 0100 | 0 | 1010 |
| 5 | 0101 | * | 1011 |
| 6 | 0110 | # | 1100 |
| All other codes are reserved. | | | |

NAR_AN_CAP - Narrow analog capability.

If the mobile station is capable of narrow analog operation, the mobile station shall set this bit to '1'; otherwise, the mobile station shall set this bit to '0'.

PACA_REORIG - PACA re-origination.

If this is a user directed origination, the mobile station shall set this field to '0'. If this is a PACA re-origination, the mobile station shall set this field to '1'.

RETURN_CAUSE - Reason for the mobile station registration or access.

The mobile station shall set this field to the RETURN_CAUSE value shown in Table 6.7.1.3.2.1-2 corresponding to the service redirection failure condition (see 6.6.1.1).

MORE_RECORDS - More records indicator.

This field indicates whether information records will be sent in a later *Origination Continuation Message*. If information records will be sent, the mobile station shall set this field to '1'; otherwise, the mobile station shall set this field to '0'.

ENCRYPTION_- Encryption algorithms supported by the mobile station.

SUPPORTED

If AUTH_MODE is equal to '00', the mobile station shall omit this field; otherwise, the mobile station shall set this field as specified in Table 6.7.1.3.2.4-5.

Table 6.7.1.3.2.4-5. Encryption Algorithms Supported

| Description | ENCRYPTION_SUPPORTED (binary) |
|---|----------------------------------|
| Basic encryption supported | 0000 |
| Basic and Enhanced encryption supported | 0001 |
| Reserved | 0010 - 1111 |

PACA_SUPPORTED - CDMA PACA Support Indication.

This field identifies the mobile station's support for PACA in CDMA mode. If MOB_P_REV_p of the current band class is greater than four, the mobile station shall set this field to '1'; otherwise, the mobile station shall set this field as follows.

If PACA in CDMA mode is supported, the mobile station shall set this field to '1'; otherwise, the mobile station shall set this field to '0'.

NUM_ALT_SO - Number of alternative service options.

The mobile station shall set this field to the number of alternative service options it supports other than the one specified in the SERVICE_OPTION field. The mobile station shall set this field to a value less than or equal to MAX_NUM_ALT_SO_s.

ALT_SO - Alternative service option.

The mobile station shall include NUM_ALT_SO occurrences of this field. The mobile station shall set this field to the value specified in TSB58-A, corresponding to the alternative service option supported by the mobile station.

ACTIVE_PILOT-STRENGTH - Pilot strength.

See 6.7.1.3.1.3.

FIRST_IS_ACTIVE - The active pilot is the first pilot on which an access probe was sent.

See 6.7.1.3.1.3.

FIRST_IS_PTA - The first pilot is the previous t to the active pilot on which an access probe was sent.

See 6.7.1.3.1.3.

NUM_ADD_PILOTS - Number of additional reported pilots.

See 6.7.1.3.1.3.

The mobile station shall include NUM_ADD_PILOTS occurrences of the following four-field record (one for each additional pilot being reported). The mobile station shall include pilots which are in the ACCESS_HO_LIST and OTHER_REPORTED_LIST as described in

6.6.3.1.7. When calculating the number of dialed digits to be included, the mobile station shall assume that the number of additional reported pilots (NUM_ADD_PILOTS) is equal to five.

PILOT_PN_PHASE - Pilot measured phase.

See 6.7.1.3.1.3.

PILOT_STRENGTH - Pilot strength.

See 6.7.1.3.1.3.

ACCESS_HO_EN - Access handoff enable.

See 6.7.1.3.1.3.

ACCESS_ATTEMPTED - Access attempted flag.

See 6.7.1.4.1.3.

RESERVED - Reserved bits.

The mobile station shall add reserved bits as needed in order to make the length of the entire message equal to an integer number of octets. The mobile station shall set these bits to '0'.

6.7.1.3.2.5 Page Response Message

When the mobile station sends a *Page Response Message*, it shall use the following variable-length message format:

| Field | Length (bits) |
|-----------------------|---------------|
| MSG_TYPE ('00000101') | 8 |
| ACK_SEQ | 3 |
| MSG_SEQ | 3 |
| ACK_REQ | 1 |
| VALID_ACK | 1 |
| ACK_TYPE | 3 |
| MSID_TYPE | 3 |
| MSID_LEN | 4 |
| MSID | 8 × MSID_LEN |
| AUTH_MODE | 2 |
| AUTHR | 0 or 18 |
| RANDC | 0 or 8 |
| COUNT | 0 or 6 |
| MOB_TERM | 1 |
| SLOT_CYCLE_INDEX | 3 |
| MOB_P_REV | 8 |
| SCM | 8 |
| REQUEST_MODE | 3 |
| SERVICE_OPTION | 16 |
| PM | 1 |
| NAR_AN_CAP | 1 |
| ENCRYPTION_SUPPORTED | 0 or 4 |
| NUM_ALT_SO | 3 |

NUM_ALT_SO occurrences of the following field:

| | |
|--------|----|
| ALT_SO | 16 |
|--------|----|

| | |
|-----------------------|---|
| ACTIVE_PILOT_STRENGTH | 6 |
|-----------------------|---|

(continues on next page)

| Field | Length (bits) |
|-----------------|---------------|
| FIRST_IS_ACTIVE | 1 |
| FIRST_IS_PTA | 1 |
| NUM_ADD_PILOTS | 3 |

NUM_ADD_PILOTS occurrences of the following record:

| | |
|------------------|----|
| PILOT_PN_PHASE | 15 |
| PILOT_STRENGTH | 6 |
| ACCESS_HO_EN | 1 |
| ACCESS_ATTEMPTED | 1 |

| | |
|----------|-------------------|
| RESERVED | 0 - 7 (as needed) |
|----------|-------------------|

- MSG_TYPE - Message type.
The mobile station shall set this field to '00000101'.
- ACK_SEQ - Acknowledgment sequence number.
See 6.7.1.3.1.1.
- MSG_SEQ - Message sequence number.
See 6.7.1.3.1.1.
- ACK_REQ - Acknowledgment required indicator.
See 6.7.1.3.1.1.
- VALID_ACK - Valid acknowledgment indicator.
See 6.7.1.3.1.1.
- ACK_TYPE - Acknowledgment address type.
See 6.7.1.3.1.1.
- MSID_TYPE - Mobile station identifier field type.
See 6.7.1.3.1.1.
- MSID_LEN - Mobile station identifier field length.
See 6.7.1.3.1.1.
- MSID - Mobile station identifier.
See 6.7.1.3.1.1.
- AUTH_MODE - Authentication mode.
See 6.7.1.3.1.2.
- AUTHR - Authentication data.
See 6.7.1.3.1.2.

| | | | |
|----|------------------|---|--|
| 1 | RANDC | - | Random challenge value. |
| 2 | | | See 6.7.1.3.1.2. |
| 3 | COUNT | - | Call history parameter. |
| 4 | | | See 6.7.1.3.1.2. |
| 5 | MOB_TERM | - | Mobile terminated calls accepted indicator. |
| 6 | | | If the mobile station is configured to accept mobile terminated |
| 7 | | | calls while operating with the current roaming status (see |
| 8 | | | 6.6.5.3), the mobile station shall set this bit to '1'. Otherwise, |
| 9 | | | the mobile station shall set this bit to '0'. |
| 10 | SLOT_CYCLE_INDEX | - | Slot cycle index. |
| 11 | | | If the mobile station is configured for slotted mode operation, |
| 12 | | | the mobile station shall set this field to the preferred slot cycle |
| 13 | | | index, SLOT_CYCLE_INDEX _p (see 6.6.2.1.1). Otherwise, the |
| 14 | | | mobile station shall set this field to '000'. |
| 15 | MOB_P_REV | - | Protocol revision of the mobile station. |
| 16 | | | The mobile station shall set this field to '00000100' or |
| 17 | | | '00000101'. ⁴ |
| 18 | SCM | - | Station class mark. |
| 19 | | | The mobile station shall set this field to the station class mark |
| 20 | | | of the mobile station. See 6.3.3. |
| 21 | REQUEST_MODE | - | Requested mode code. The mobile station shall set this field |
| 22 | | | to the value shown in Table 6.7.1.3.2.4-1 corresponding to its |
| 23 | | | current configuration. |
| 24 | SERVICE_OPTION | - | Service option. |
| 25 | | | If the mobile station accepts the service option specified in the |
| 26 | | | <i>General Page Message</i> , it shall set this field to the service |
| 27 | | | option number specified in that message if that message |
| 28 | | | contained an explicit service option field; otherwise, the |
| 29 | | | mobile station shall set this field to the default service option |
| 30 | | | number or to '0000000000000001' if the <i>General Page</i> |
| 31 | | | <i>Message</i> did not contain a service option field. |
| 32 | | | If the mobile station does not accept the service option |
| 33 | | | specified in the <i>General Page Message</i> and has an alternative |
| 34 | | | service option to request, it shall set this field to the service |
| 35 | | | option code specified in TSB58-A corresponding to the |
| 36 | | | alternative service option. |
| 37 | | | If the mobile station does not accept the service option |
| 38 | | | specified in the <i>General Page Message</i> and does not have an |

⁴ A protocol revision of '00000101' indicates that the mobile station complies with all of the requirements (per use of "shall") specified in this document. A protocol revision of '00000100' indicates that the mobile station complies with all of the requirements (per use of "shall") specified in this document, except those pertaining to one or more of the following: PACA, Power Up Function, mobile-assisted hard handoff, and analog TIA/EIA-553-A compatibility.

| | | |
|----|-----------------|---|
| 1 | | alternative service option to request, the mobile station shall |
| 2 | | set this field to '0000000000000000' to reject the service |
| 3 | | option specified by the <i>General Page Message</i> . |
| 4 | PM | - Privacy mode indicator. |
| 5 | | To request voice privacy, the mobile station shall set this field |
| 6 | | to '1'; otherwise, the mobile station shall set this field to '0'. |
| 7 | NAR_AN_CAP | - Narrow analog capability. |
| 8 | | If the mobile station is capable of narrow analog operation, |
| 9 | | the mobile station shall set this bit to '1'; otherwise, the |
| 10 | | mobile station shall set this bit to '0'. |
| 11 | ENCRYPTION_SUP- | - Encryption algorithms supported by the mobile station. |
| 12 | PORTED | If AUTH_MODE is equal to '00', the mobile station shall omit |
| 13 | | this field; otherwise, the mobile station shall set this field as |
| 14 | | specified in table 6.7.1.3.2.4-5. |
| 15 | NUM_ALT_SO | - Number of alternative service options. |
| 16 | | The mobile station shall set this field to the number of |
| 17 | | alternative service options it supports other than the one |
| 18 | | specified in the SERVICE_OPTION field. The mobile station |
| 19 | | shall set this field to a value less than or equal to |
| 20 | | MAX_NUM_ALT_SOs. |
| 21 | ALT_SO | - Alternative service option. |
| 22 | | The mobile station shall include NUM_ALT_SO occurrences of |
| 23 | | this field. The mobile station shall set this field to the value |
| 24 | | specified in TSB58-A, corresponding to the alternative service |
| 25 | | option supported by the mobile station. |
| 26 | ACTIVE_PILOT- | |
| 27 | _STRENGTH | - Pilot strength. |
| 28 | | See 6.7.1.3.1.3. |
| 29 | FIRST_IS_ACTIVE | - The active pilot is the first pilot on which an access probe was |
| 30 | | sent. |
| 31 | | See 6.7.1.3.1.3. |
| 32 | FIRST_IS_PTA | - The first pilot is the previous to the active pilot on which an |
| 33 | | access probe was sent. |
| 34 | | See 6.7.1.3.1.3. |
| 35 | NUM_ADD_PILOTS | - Number of additional reported pilots. |
| 36 | | See 6.7.1.3.1.3. |
| 37 | | The mobile station shall include NUM_ADD_PILOTS occurrences of the following four-field |
| 38 | | record (one for each additional pilot being reported). The mobile station shall report pilots |
| 39 | | which are in the ACCESS_HO_LIST and OTHER_REPORTED_LIST as described in |
| 40 | | 6.6.3.1.7. |
| 41 | PILOT_PN_PHASE | - Pilot measured phase. |
| 42 | | See 6.7.1.3.1.3. |

| | | | |
|----|------------------|---|--|
| 1 | PILOT_STRENGTH | - | Pilot strength. |
| 2 | | | See 6.7.1.3.1.3. |
| 3 | ACCESS_HO_EN | - | Access handoff enable. |
| 4 | | | See 6.7.1.3.1.3. |
| 5 | ACCESS_ATTEMPTED | - | Access attempted flag. |
| 6 | | | See 6.7.1.4.1.3. |
| 7 | RESERVED | - | Reserved bits. |
| 8 | | | The mobile station shall add reserved bits as needed, in order |
| 9 | | | to make the length of the entire message equal to an integer |
| 10 | | | number of octets. The mobile station shall set these bits |
| 11 | | | to '0'. |
| 12 | | | |

6.7.1.3.2.6 Authentication Challenge Response Message

When the mobile station sends an *Authentication Challenge Response Message* on the Access Channel, it shall use the following variable length message format:

| Field | Length (bits) |
|-----------------------|---------------|
| MSG_TYPE ('00000110') | 8 |
| ACK_SEQ | 3 |
| MSG_SEQ | 3 |
| ACK_REQ | 1 |
| VALID_ACK | 1 |
| ACK_TYPE | 3 |
| MSID_TYPE | 3 |
| MSID_LEN | 4 |
| MSID | 8 × MSID_LEN |
| AUTH_MODE | 2 |
| AUTHU | 18 |
| ACTIVE_PILOT_STRENGTH | 6 |
| FIRST_IS_ACTIVE | 1 |
| FIRST_IS_PTA | 1 |
| NUM_ADD_PILOTS | 3 |

NUM_ADD_PILOTS occurrences of the following record:

| | |
|------------------|----|
| PILOT_PN_PHASE | 15 |
| PILOT_STRENGTH | 6 |
| ACCESS_HO_EN | 1 |
| ACCESS_ATTEMPTED | 1 |

| | |
|----------|-------------------|
| RESERVED | 0 - 7 (as needed) |
|----------|-------------------|

- MSG_TYPE - Message type.
The mobile station shall set this field to '00000110'.
- ACK_SEQ - Acknowledgment sequence number.
See 6.7.1.3.1.1.
- MSG_SEQ - Message sequence number.
See 6.7.1.3.1.1.

| | | | |
|----|---|---|---|
| 1 | ACK_REQ | - | Acknowledgment required indicator. See 6.7.1.3.1.1. |
| 2 | | | |
| 3 | VALID_ACK | - | Valid acknowledgment indicator. See 6.7.1.3.1.1. |
| 4 | | | |
| 5 | ACK_TYPE | - | Acknowledgment address type. See 6.7.1.3.1.1. |
| 6 | | | |
| 7 | MSID_TYPE | - | Mobile station identifier field type. See 6.7.1.3.1.1. |
| 8 | | | |
| 9 | MSID_LEN | - | Mobile station identifier field length. See 6.7.1.3.1.1. |
| 10 | | | |
| 11 | MSID | - | Mobile station identifier. See 6.7.1.3.1.1. |
| 12 | | | |
| 13 | AUTH_MODE | - | Authentication Mode. The mobile station shall set this field to '00'. |
| 14 | | | |
| 15 | AUTHU | - | Authentication challenge response. The mobile station shall set this field as specified in 6.3.12.1.5. |
| 16 | | | |
| 17 | | | |
| 18 | ACTIVE_PILOT- | | |
| 19 | STRENGTH | - | Pilot strength. See 6.7.1.3.1.3. |
| 20 | | | |
| 21 | FIRST_IS_ACTIVE | - | The active pilot is the first pilot on which an access probe was sent. See 6.7.1.3.1.3. |
| 22 | | | |
| 23 | | | |
| 24 | FIRST_IS_PTA | - | The first pilot is the previous to the active pilot on which an access probe was sent. See 6.7.1.3.1.3. |
| 25 | | | |
| 26 | | | |
| 27 | NUM_ADD_PILOTS | - | Number of additional reported pilots. If PILOT_REPORT _s equals to '1', see 6.7.1.3.1.3. If PILOT_REPORT _s equals to '0', the mobile station shall set this field to '000'. |
| 28 | | | |
| 29 | | | |
| 30 | | | |
| 31 | The mobile station shall include NUM_ADD_PILOTS occurrences of the following four-field | | |
| 32 | record (one for each additional pilot being reported). The mobile station shall report pilots | | |
| 33 | which are in the ACCESS_HO_LIST and OTHER_REPORTED_LIST as described in | | |
| 34 | 6.6.3.1.7. | | |
| 35 | PILOT_PN_PHASE | - | Pilot measured phase. See 6.7.1.3.1.3. |
| 36 | | | |
| 37 | PILOT_STRENGTH | - | Pilot strength. See 6.7.1.3.1.3. |
| 38 | | | |

| | | | |
|----|------------------|---|---|
| 1 | ACCESS_HO_EN | - | Access handoff enable. |
| 2 | | | See 6.7.1.3.1.3. |
| 3 | ACCESS_ATTEMPTED | - | Access attempted flag. |
| 4 | | | See 6.7.1.3.1.3. |
| 5 | RESERVED | - | Reserved bits. |
| 6 | | | The mobile station shall add reserved bits as needed in order |
| 7 | | | to make the length of the entire message equal to an integer |
| 8 | | | number of octets. The mobile station shall set these bits |
| 9 | | | to '0'. |
| 10 | | | |

1 6.7.1.3.2.7 Status Response Message

2 When the mobile station sends a *Status Response Message*, it shall use the following
 3 variable-length message format:

| Field | Length (bits) |
|-----------------------|-------------------|
| MSG_TYPE ('00000111') | 8 |
| ACK_SEQ | 3 |
| MSG_SEQ | 3 |
| ACK_REQ | 1 |
| VALID_ACK | 1 |
| ACK_TYPE | 3 |
| MSID_TYPE | 3 |
| MSID_LEN | 4 |
| MSID | 8 × MSID_LEN |
| AUTH_MODE | 2 |
| QUAL_INFO_TYPE | 8 |
| QUAL_INFO_LEN | 3 |
| Type-specific fields | 8 × QUAL_INFO_LEN |

One or more occurrences of the following record:

| | |
|----------------------|----------------|
| RECORD_TYPE | 8 |
| RECORD_LEN | 8 |
| Type-specific fields | 8 × RECORD_LEN |

| | |
|----------|---|
| RESERVED | 3 |
|----------|---|

4

5

MSG_TYPE - Message type.

6

The mobile station shall set this field to '00000111'.

7

ACK_SEQ - Acknowledgment sequence number.

8

See 6.7.1.3.1.1.

9

MSG_SEQ - Message sequence number.

10

See 6.7.1.3.1.1.

11

ACK_REQ - Acknowledgment required indicator.

12

See 6.7.1.3.1.1.

13

VALID_ACK - Valid acknowledgment indicator.

14

See 6.7.1.3.1.1.

| | | |
|----|--|--|
| 1 | ACK_TYPE | - Acknowledgment address type. |
| 2 | | See 6.7.1.3.1.1. |
| 3 | MSID_TYPE | - Mobile station identifier field type. |
| 4 | | See 6.7.1.3.1.1. |
| 5 | MSID_LEN | - Mobile station identifier field length. |
| 6 | | See 6.7.1.3.1.1. |
| 7 | MSID | - Mobile station identifier. |
| 8 | | See 6.7.1.3.1.1. |
| 9 | AUTH_MODE | - Authentication Mode. |
| 10 | | The mobile station shall set this field to '00'. |
| 11 | QUAL_INFO_TYPE | - Qualification information type. |
| 12 | | The mobile station shall set this field to the QUAL_INFO_TYPE |
| 13 | | field in the corresponding <i>Status Request Message</i> . |
| 14 | QUAL_INFO_LEN | - Qualification information length. |
| 15 | | The mobile station shall set this field to the QUAL_INFO_LEN |
| 16 | | field in the corresponding <i>Status Request Message</i> . |
| 17 | Type-specific fields | - Type-specific fields. |
| 18 | | The mobile station shall set these fields to the qualification |
| 19 | | information in the corresponding <i>Status Request Message</i> . |
| 20 | The mobile station shall include all the records requested in the corresponding <i>Status</i> | |
| 21 | <i>Request Message</i> . The mobile station shall include one occurrence of the following fields for | |
| 22 | each information record to be included: | |
| 23 | RECORD_TYPE | - Information record type. |
| 24 | | The mobile station shall set this field to the record type value |
| 25 | | shown in Table 7.7.2.3.2.15-2 corresponding to the type of |
| 26 | | this information record. |
| 27 | RECORD_LEN | - Information record length. |
| 28 | | The mobile station shall set this field to the number of octets |
| 29 | | included in the type-specific fields of this information record. |
| 30 | Type-specific fields | - Type-specific fields. |
| 31 | | The mobile station shall set these fields to the information as |
| 32 | | specified in 6.7.4 for the specific type of records. The mobile |
| 33 | | station shall only specify the information corresponding to the |
| 34 | | included qualification information. |
| 35 | RESERVED | - Reserved bits. |
| 36 | | The mobile station shall set this field to '000'. |
| 37 | | |

1 6.7.1.3.2.8 TMSI Assignment Completion Message

- 2 When the mobile station sends a *TMSI Assignment Completion Message* on the Access
 3 Channel, it shall use the following variable-length message format:

| Field | Length (bits) |
|-----------------------|---------------|
| MSG_TYPE ('00001000') | 8 |
| ACK_SEQ | 3 |
| MSG_SEQ | 3 |
| ACK_REQ | 1 |
| VALID_ACK | 1 |
| ACK_TYPE | 3 |
| MSID_TYPE | 3 |
| MSID_LEN | 4 |
| MSID | 8 × MSID_LEN |
| AUTH_MODE | 2 |
| AUTHR | 0 or 18 |
| RANDC | 0 or 8 |
| COUNT | 0 or 6 |
| ACTIVE_PILOT_STRENGTH | 6 |
| FIRST_IS_ACTIVE | 1 |
| FIRST_IS_PTA | 1 |
| NUM_ADD_PILOTS | 3 |

NUM_ADD_PILOTS occurrences of the following record:

| | |
|------------------|----|
| PILOT_PN_PHASE | 15 |
| PILOT_STRENGTH | 6 |
| ACCESS_HO_EN | 1 |
| ACCESS_ATTEMPTED | 1 |

| | |
|----------|-------------------|
| RESERVED | 0 - 7 (as needed) |
|----------|-------------------|

4
 5 MSG_TYPE - Message type.

6 The mobile station shall set this field to '00001000'.

7 ACK_SEQ - Acknowledgment sequence number.

8 See 6.7.1.3.1.1.

| | | | |
|----|-----------------|---|---|
| 1 | MSG_SEQ | - | Message sequence number. See 6.7.1.3.1.1. |
| 2 | | | |
| 3 | ACK_REQ | - | Acknowledgment required indicator. See 6.7.1.3.1.1. |
| 4 | | | |
| 5 | VALID_ACK | - | Valid acknowledgment indicator. See 6.7.1.3.1.1. |
| 6 | | | |
| 7 | ACK_TYPE | - | Acknowledgment address type. See 6.7.1.3.1.1. |
| 8 | | | |
| 9 | MSID_TYPE | - | Mobile station identifier field type. See 6.7.1.3.1.1. |
| 10 | | | |
| 11 | MSID_LEN | - | Mobile station identifier field length. See 6.7.1.3.1.1. |
| 12 | | | |
| 13 | MSID | - | Mobile station identifier. See 6.7.1.3.1.1. |
| 14 | | | |
| 15 | AUTH_MODE | - | Authentication mode. See 6.7.1.3.1.2. |
| 16 | | | |
| 17 | AUTHR | - | Authentication data. See 6.7.1.3.1.2. |
| 18 | | | |
| 19 | RANDC | - | Random challenge value. See 6.7.1.3.1.2. |
| 20 | | | |
| 21 | COUNT | - | Call history parameter. See 6.7.1.3.1.2. |
| 22 | | | |
| 23 | ACTIVE_PILOT- | | |
| 24 | _STRENGTH | - | Pilot strength. See 6.7.1.3.1.3. |
| 25 | | | |
| 26 | FIRST_IS_ACTIVE | - | The active pilot is the first pilot on which an access probe was sent. See 6.7.1.3.1.3. |
| 27 | | | |
| 28 | | | |
| 29 | FIRST_IS_PTA | - | The first pilot is the previous to the active pilot on which an access probe was sent. See 6.7.1.3.1.3. |
| 30 | | | |
| 31 | | | |
| 32 | NUM_ADD_PILOTS | - | Number of additional reported pilots. If PILOT_REPORT _s equals to '1', see 6.7.1.3.1.3. If PILOT_REPORT _s equals to '0', the mobile station shall set this field to '000'. |
| 33 | | | |
| 34 | | | |
| 35 | | | |

36 The mobile station shall include NUM_ADD_PILOTS occurrences of the following four-field
37 record (one for each additional pilot being reported). The mobile station shall report pilots

1 which are in the ACCESS_HO_LIST and OTHER_REPORTED_LIST as described in
2 6.6.3.1.7.

3 PILOT_PN_PHASE - Pilot measured phase.

4 See 6.7.1.3.1.3.

5 PILOT_STRENGTH - Pilot strength.

6 See 6.7.1.3.1.3.

7 ACCESS_HO_EN - Access handoff enable.

8 See 6.7.1.3.1.3.

9 ACCESS_ATTEMPTED - Access attempted flag.

10 See 6.7.1.3.1.3.

11 RESERVED - Reserved bits.

12 The mobile station shall add reserved bits as needed in order
13 to make the length of the entire message equal to an integer
14 number of octets. The mobile station shall set these bits
15 to '0'.

1 6.7.1.3.2.9 PACA Cancel Message

2 When the mobile station sends a *PACA Cancel Message*, it shall use the following variable
 3 length message format:

| Field | Length (bits) |
|-----------------------|---------------|
| MSG_TYPE ('00001001') | 8 |
| ACK_SEQ | 3 |
| MSG_SEQ | 3 |
| ACK_REQ | 1 |
| VALID_ACK | 1 |
| ACK_TYPE | 3 |
| MSID_TYPE | 3 |
| MSID_LEN | 4 |
| MSID | 8 × MSID_LEN |
| AUTH_MODE | 2 |
| AUTHR | 0 or 18 |
| RANDC | 0 or 8 |
| COUNT | 0 or 6 |
| ACTIVE_PILOT_STRENGTH | 6 |
| FIRST_IS_ACTIVE | 1 |
| FIRST_IS_PTA | 1 |
| NUM_ADD_PILOTS | 3 |

NUM_ADD_PILOTS occurrences of the following record:

| | |
|------------------|----|
| PILOT_PN_PHASE | 15 |
| PILOT_STRENGTH | 6 |
| ACCESS_HO_EN | 1 |
| ACCESS_ATTEMPTED | 1 |

| | |
|----------|-------------------|
| RESERVED | 0 - 7 (as needed) |
|----------|-------------------|

4
 5 MSG_TYPE - Message type.

6 The mobile station shall set this field to '00001001'.

7 ACK_SEQ - Acknowledgment sequence number.

8 See 6.7.1.3.1.1.

| | | | |
|----|-----------------|---|---|
| 1 | MSG_SEQ | - | Message sequence number. |
| 2 | | | See 6.7.1.3.1.1. |
| 3 | ACK_REQ | - | Acknowledgment required indicator. |
| 4 | | | See 6.7.1.3.1.1. |
| 5 | VALID_ACK | - | Valid acknowledgment indicator. |
| 6 | | | See 6.7.1.3.1.1. |
| 7 | ACK_TYPE | - | Acknowledgment address type. |
| 8 | | | See 6.7.1.3.1.1. |
| 9 | MSID_TYPE | - | Mobile station identifier field type. |
| 10 | | | See 6.7.1.3.1.1. |
| 11 | MSID_LEN | - | Mobile station identifier field length. |
| 12 | | | See 6.7.1.3.1.1. |
| 13 | MSID | - | Mobile station identifier. |
| 14 | | | See 6.7.1.3.1.1. |
| 15 | AUTH_MODE | - | Authentication mode. |
| 16 | | | See 6.7.1.3.1.2. |
| 17 | AUTHR | - | Authentication data. |
| 18 | | | See 6.7.1.3.1.2. |
| 19 | RANDC | - | Random challenge value. |
| 20 | | | See 6.7.1.3.1.2. |
| 21 | COUNT | - | Call history parameter. |
| 22 | | | See 6.7.1.3.1.2. |
| 23 | ACTIVE_PILOT- | | |
| 24 | _STRENGTH | - | Pilot strength. |
| 25 | | | See 6.7.1.3.1.3. |
| 26 | FIRST_IS_ACTIVE | - | The active pilot is the first pilot on which an access probe was sent. |
| 27 | | | See 6.7.1.3.1.3. |
| 28 | | | |
| 29 | FIRST_IS_PTA | - | The first pilot is the previous to the active pilot on which an access probe was sent. |
| 30 | | | See 6.7.1.3.1.3. |
| 31 | | | |
| 32 | NUM_ADD_PILOTS | - | Number of additional reported pilots. |
| 33 | | | If PILOT_REPORT _s equals to '1', see 6.7.1.3.1.3. |
| 34 | | | If PILOT_REPORT _s equals to '0', the mobile station shall set this field to '000'. |
| 35 | | | |

36 The mobile station shall include NUM_ADD_PILOTS occurrences of the following four-field
 37 record (one for each additional pilot being reported). The mobile station shall report pilots

1 which are in the ACCESS_HO_LIST and OTHER_REPORTED_LIST as described in
2 6.6.3.1.7.

3 PILOT_PN_PHASE - Pilot measured phase.

4 See 6.7.1.3.1.3.

5 PILOT_STRENGTH - Pilot strength.

6 See 6.7.1.3.1.3.

7 ACCESS_HO_EN - Access handoff enable.

8 See 6.7.1.3.1.3.

9 ACCESS_ATTEMPTED - Access attempted flag.

10 See 6.7.1.3.1.3.

11 RESERVED - Reserved bits.

12 The mobile station shall add reserved bits as needed in order
13 to make the length of the entire message equal to an integer
14 number of octets. The mobile station shall set these bits
15 to '0'.

1 6.7.1.3.2.10 Extended Status Response Message

- 2 When the mobile station sends an *Extended Status Response Message*, it shall use the
 3 following variable-length message format:

| Field | Length (bits) |
|-----------------------|-------------------|
| MSG_TYPE ('00001010') | 8 |
| ACK_SEQ | 3 |
| MSG_SEQ | 3 |
| ACK_REQ | 1 |
| VALID_ACK | 1 |
| ACK_TYPE | 3 |
| MSID_TYPE | 3 |
| MSID_LEN | 4 |
| MSID | 8 × MSID_LEN |
| AUTH_MODE | 2 |
| QUAL_INFO_TYPE | 8 |
| QUAL_INFO_LEN | 3 |
| Type-specific fields | 8 × QUAL_INFO_LEN |
| NUM_INFO_RECORDS | 4 |

NUM_INFO_RECORDS occurrences of the following record:

| | |
|----------------------|----------------|
| RECORD_TYPE | 8 |
| RECORD_LEN | 8 |
| Type-specific fields | 8 × RECORD_LEN |

| | |
|-----------------------|---|
| ACTIVE_PILOT_STRENGTH | 6 |
| FIRST_IS_ACTIVE | 1 |
| FIRST_IS_PTA | 1 |
| NUM_ADD_PILOTS | 3 |

NUM_ADD_PILOTS occurrences of the following record:

| | |
|------------------|----|
| PILOT_PN_PHASE | 15 |
| PILOT_STRENGTH | 6 |
| ACCESS_HO_EN | 1 |
| ACCESS_ATTEMPTED | 1 |

| | |
|----------|-------------------|
| RESERVED | 0 - 7 (as needed) |
|----------|-------------------|

| | | | |
|----|--|---|--|
| 1 | MSG_TYPE | - | Message type. |
| 2 | | | The mobile station shall set this field to '00001010'. |
| 3 | ACK_SEQ | - | Acknowledgment sequence number. |
| 4 | | | See 6.7.1.3.1.1. |
| 5 | MSG_SEQ | - | Message sequence number. |
| 6 | | | See 6.7.1.3.1.1. |
| 7 | ACK_REQ | - | Acknowledgment required indicator. |
| 8 | | | See 6.7.1.3.1.1. |
| 9 | VALID_ACK | - | Valid acknowledgment indicator. |
| 10 | | | See 6.7.1.3.1.1. |
| 11 | ACK_TYPE | - | Acknowledgment address type. |
| 12 | | | See 6.7.1.3.1.1. |
| 13 | MSID_TYPE | - | Mobile station identifier field type. |
| 14 | | | See 6.7.1.3.1.1. |
| 15 | MSID_LEN | - | Mobile station identifier field length. |
| 16 | | | See 6.7.1.3.1.1. |
| 17 | MSID | - | Mobile station identifier. |
| 18 | | | See 6.7.1.3.1.1. |
| 19 | AUTH_MODE | - | Authentication Mode. |
| 20 | | | The mobile station shall set this field to '00'. |
| 21 | QUAL_INFO_TYPE | - | Qualification information type. |
| 22 | | | The mobile station shall set this field to the QUAL_INFO_TYPE |
| 23 | | | field in the corresponding <i>Status Request Message</i> . |
| 24 | QUAL_INFO_LEN | - | Qualification information length. |
| 25 | | | The mobile station shall set this field to the QUAL_INFO_LEN |
| 26 | | | field in the corresponding <i>Status Request Message</i> . |
| 27 | Type-specific fields | - | Type-specific fields. |
| 28 | | | The mobile station shall set these fields to the qualification |
| 29 | | | information in the corresponding <i>Status Request Message</i> . |
| 30 | NUM_INFO_RECORDS | - | Number of information records included. |
| 31 | | | The mobile station shall set this field to the number of |
| 32 | | | information records which are included. The mobile station |
| 33 | | | shall include all the records requested in the corresponding |
| 34 | | | <i>Status Request Message</i> . |
| 35 | The mobile station shall include one occurrence of the following fields for each information | | |
| 36 | record which is included: | | |
| 37 | RECORD_TYPE | - | Information record type. |
| 38 | | | The mobile station shall set this field to the record type value |
| 39 | | | shown in Table 7.7.2.3.2.15-2 corresponding to the type of |
| 40 | | | this information record. |

| | | | |
|----|---|---|---|
| 1 | RECORD_LEN | - | Information record length. |
| 2 | | | The mobile station shall set this field to the number of octets |
| 3 | | | included in the type-specific fields of this information record. |
| 4 | Type-specific fields | - | Type-specific fields. |
| 5 | | | The mobile station shall set these fields to the information as |
| 6 | | | specified in 6.7.4 for the specific type of records. The mobile |
| 7 | | | station shall only specify the information corresponding to the |
| 8 | | | included qualification information. |
| 9 | ACTIVE_PILOT- | | |
| 10 | _STRENGTH | - | Pilot strength. |
| 11 | | | See 6.7.1.3.1.3. |
| 12 | FIRST_IS_ACTIVE | - | The active pilot is the first pilot on which an access probe was |
| 13 | | | sent. |
| 14 | | | See 6.7.1.3.1.3. |
| 15 | FIRST_IS_PTA | - | The first pilot is the previous to the active pilot on which an |
| 16 | | | access probe was sent. |
| 17 | | | See 6.7.1.3.1.3. |
| 18 | NUM_ADD_PILOTS | - | Number of additional reported pilots. |
| 19 | | | If PILOT_REPORT _s is equal to '1', see 6.7.1.3.1.3. If |
| 20 | | | PILOT_REPORT _s is equal to '0', the mobile station shall set |
| 21 | | | this field to '000'. |
| 22 | The mobile station shall include NUM_ADD_PILOTS occurrences of the following four-field | | |
| 23 | record (one for each additional pilot being reported). If the mobile station is unable to | | |
| 24 | include all pilots which are in the ACCESS_HO_LIST and OTHER_REPORTED_LIST, the | | |
| 25 | mobile station shall include the pilots in the ACCESS_HO_LIST and those pilots having the | | |
| 26 | smallest PILOT_STRENGTH (largest E_c/I_o) (see 6.7.1.3.1.3). | | |
| 27 | PILOT_PN_PHASE | - | Pilot measured phase. |
| 28 | | | See 6.7.1.3.1.3. |
| 29 | PILOT_STRENGTH | - | Pilot strength. |
| 30 | | | See 6.7.1.3.1.3. |
| 31 | ACCESS_HO_EN | - | Access handoff enable. |
| 32 | | | See 6.7.1.3.1.3. |
| 33 | ACCESS_ATTEMPTED | - | Access attempted flag. |
| 34 | | | See 6.7.1.3.1.3. |
| 35 | RESERVED | - | Reserved bits. |
| 36 | | | The mobile station shall add reserved bits as needed in order |
| 37 | | | to make the length of the entire message equal to an integer |
| 38 | | | number of octets. The mobile station shall set these bits |
| 39 | | | to '0'. |

6.7.2 Reverse Traffic Channel

During Traffic Channel operation, the mobile station sends signaling messages to the base station using the Reverse Traffic Channel.

6.7.2.1 Reverse Traffic Channel Structure

When sending a *Reverse Traffic Channel Message*, the mobile station shall send it as signaling traffic using the signaling traffic formats specified in 6.1.3.3.11 and 6.1.3.3.12. The mobile station may use one or more Reverse Traffic Channel frames to send the message.

The first signaling traffic bit in a Reverse Traffic Channel frame shall be a Start of Message (SOM) Bit. The mobile station shall set this bit to '1' if a *Reverse Traffic Channel Message* begins in the frame, or to '0' if the frame contains bits of a *Reverse Traffic Channel Message* that began in a previous frame. The mobile station shall use the remaining signaling traffic bits of the frame to send *Reverse Traffic Channel Message* bits. If the frame used to send the last bits of a message contains any unused signaling traffic bits, the mobile station shall set each of these bits, referred to as padding bits, to '0'.

6.7.2.2 Reverse Traffic Channel Message Structure

A *Reverse Traffic Channel Message* shall consist of a length field (MSG_LENGTH), a message body, and a CRC field, in that order (see Figure 6.7.2.2-1).

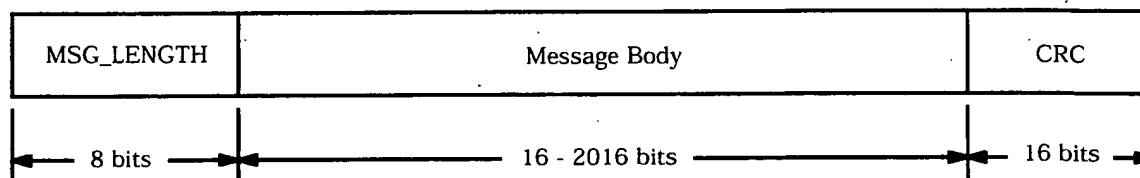


Figure 6.7.2.2-1. Reverse Traffic Channel Message Structure

6.7.2.2.1 Reverse Traffic Channel Message MSG_LENGTH Field

The mobile station shall set the MSG_LENGTH field of a *Reverse Traffic Channel Message* to the length, in octets, of the message, including the MSG_LENGTH field, the message body and the CRC field. The MSG_LENGTH field shall be 8 bits in length. The minimum value of the MSG_LENGTH field shall be 5.⁵

⁵ This accommodates the MSG_LENGTH field, the layer 2 fields present in the Message Body, and the CRC field.

6.7.2.2.2 Reverse Traffic Channel Message CRC Field

The mobile station shall set the CRC field of a *Reverse Traffic Channel Message* to the CRC computed for the message. The CRC computation shall include the MSG_LENGTH field and the message body. The CRC field shall be 16 bits in length.

The generator polynomial for the CRC shall be the standard CRC-CCITT polynomial:

$$g(x) = x^{16} + x^{12} + x^5 + 1.$$

The CRC shall be equal to the value computed by the following procedure and the logic shown in Figure 6.7.2.2.2-1:

- All shift register elements shall be initialized to logical one.⁶
- The switches shall be set in the up position.
- The information bit count k shall be defined as $8 + \text{message body length in bits}$.
- The register shall be clocked k times, with the length and message body of the message as the k input bits.
- The switches shall be set in the down position so that the output is a modulo-2 addition with a '1' and the successive shift register inputs are '0'.
- The register shall be clocked an additional 16 times.
- The 16 additional output bits shall be the CRC field.
- The bits shall be transmitted in the order in which they appear at the output of the CRC encoder.

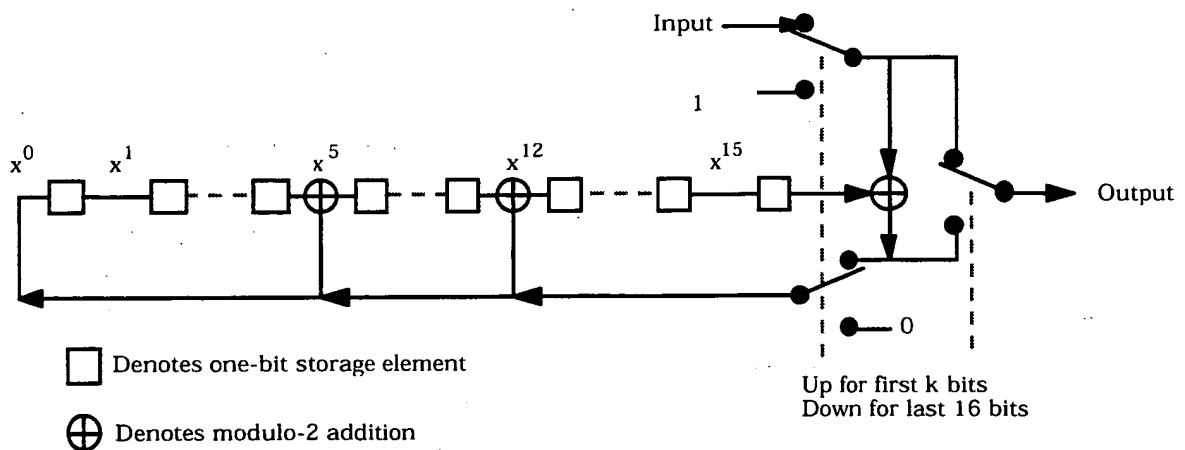


Figure 6.7.2.2.2-1. Reverse Traffic Channel Message CRC Calculation

⁶ Initialization of the register to ones causes the CRC for all-zero data to be non-zero.

6.7.2.3 Reverse Traffic Channel Message Body Format

The Reverse Traffic Channel Messages are summarized in Table 6.7.2.3-1.

Table 6.7.2.3-1. Reverse Traffic Channel Messages

| Message Name | Message Type (binary) | Section Number |
|---|-----------------------|----------------|
| Order Message | 00000001 | 6.7.2.3.2.1 |
| Authentication Challenge Response Message | 00000010 | 6.7.2.3.2.2 |
| Flash With Information Message | 00000011 | 6.7.2.3.2.3 |
| Data Burst Message | 00000100 | 6.7.2.3.2.4 |
| Pilot Strength Measurement Message | 00000101 | 6.7.2.3.2.5 |
| Power Measurement Report Message | 00000110 | 6.7.2.3.2.6 |
| Send Burst DTMF Message | 00000111 | 6.7.2.3.2.7 |
| Status Message | 00001000 | 6.7.2.3.2.8 |
| Origination Continuation Message | 00001001 | 6.7.2.3.2.9 |
| Handoff Completion Message | 00001010 | 6.7.2.3.2.10 |
| Parameters Response Message | 00001011 | 6.7.2.3.2.11 |
| Service Request Message | 00001100 | 6.7.2.3.2.12 |
| Service Response Message | 00001101 | 6.7.2.3.2.13 |
| Service Connect Completion Message | 00001110 | 6.7.2.3.2.14 |
| Service Option Control Message | 00001111 | 6.7.2.3.2.15 |
| Status Response Message | 00010000 | 6.7.2.3.2.16 |
| TMSI Assignment Completion Message | 00010001 | 6.7.2.3.2.17 |
| Supplemental Channel Request Message | 00010010 | 6.7.2.3.2.18 |
| Candidate Frequency Search Response Message | 00010011 | 6.7.2.3.2.19 |
| Candidate Frequency Search Report Message | 00010100 | 6.7.2.3.2.20 |
| Periodic Pilot Strength Measurement Message | 00010101 | 6.7.2.3.2.21 |

6.7.2.3.1 Common Fields

6.7.2.3.1.1 Common Acknowledgment Fields

All *Reverse Traffic Channel Messages* share the same three acknowledgment fields:

ACK_SEQ - Acknowledgment sequence number.

The mobile station shall set this field to the value of the MSG_SEQ field from the most recently received *Forward Traffic Channel Message* requiring acknowledgment. If no such message has been received, the mobile station shall set this field to '111'. See 6.6.4.1.3.

MSG_SEQ - Message sequence number.

The mobile station shall set this field to the message sequence number for this message. See 6.6.4.1.3.

ACK_REQ - Acknowledgment required indicator.

This field indicates whether this message requires an acknowledgment.

To indicate that this message requires acknowledgment, the mobile station shall set this field to '1'. To indicate that this message does not require acknowledgment, the mobile station shall set this field to '0'.

6.7.2.3.1.2 Common Encryption Field

All *Reverse Traffic Channel Messages* contain the following field:

ENCRYPTION - Message encryption indicator.

The mobile station shall set this field to the current message encryption mode, equal to the ENCRYPT_MODE field of the last received *Channel Assignment Message*, *Extended Channel Assignment Message*, *Extended Handoff Direction Message*, *General Handoff Direction Message*, or *Message Encryption Mode Order*. The value of this field and the encryption state of a message shall not change if the same message is retransmitted.

6.7.2.3.2 Message Body Contents

The following sections specify the contents of the message body for each message that may be sent on the Reverse Traffic Channel.

6.7.2.3.2.1 Order Message

When the mobile station sends an *Order Message* on the Reverse Traffic Channel, it shall use the following variable-length message format:

| Field | Length (bits) |
|---------------------------------|--------------------|
| MSG_TYPE ('00000001') | 8 |
| ACK_SEQ | 3 |
| MSG_SEQ | 3 |
| ACK_REQ | 1 |
| ENCRYPTION | 2 |
| ORDER | 6 |
| ADD_RECORD_LEN | 3 |
| Order-specific fields (if used) | 8 × ADD_RECORD_LEN |
| RESERVED | 6 |

- MSG_TYPE – Message type.
The mobile station shall set this field to '00000001'.
- ACK_SEQ – Acknowledgment sequence number.
See 6.7.2.3.1.1.
- MSG_SEQ – Message sequence number.
See 6.7.2.3.1.1.
- ACK_REQ – Acknowledgment required indicator.
See 6.7.2.3.1.1.
- ENCRYPTION – Message encryption indicator.
See 6.7.2.3.1.2.
- ORDER – Order code.
The mobile station shall set this field to the ORDER code.
See 6.7.3.
- ADD_RECORD_LEN – Additional record length.
The mobile station shall set this field to the number of octets in the order-specific fields included in this message.
- Order-specific fields – Order-specific fields.
The mobile station shall include order-specific fields as specified in 6.7.3.
- RESERVED – Reserved bits.
The mobile station shall set this field to '000000'.

6.7.2.3.2.2 Authentication Challenge Response Message

When the mobile station sends an *Authentication Challenge Response Message* on the Reverse Traffic Channel, it shall use the following fixed-length message format:

| Field | Length (bits) |
|-----------------------|---------------|
| MSG_TYPE ('00000010') | 8 |
| ACK_SEQ | 3 |
| MSG_SEQ | 3 |
| ACK_REQ | 1 |
| ENCRYPTION | 2 |
| AUTHU | 18 |
| RESERVED | 5 |

MSG_TYPE - Message type.

The mobile station shall set this field to '00000010'.

ACK_SEQ - Acknowledgment sequence number.

See 6.7.2.3.1.1.

MSG_SEQ - Message sequence number.

See 6.7.2.3.1.1.

ACK_REQ - Acknowledgment required indicator.

See 6.7.2.3.1.1.

ENCRYPTION - Message encryption indicator.

See 6.7.2.3.1.2.

AUTHU - Authentication challenge response.

The mobile station shall set this field as specified in 6.3.12.1.5.

RESERVED - Reserved bits.

The mobile station shall set this field to '00000'.

6.7.2.3.2.3 Flash With Information Message

When the mobile station sends a *Flash With Information Message*, it shall use the following variable-length message format:

| Field | Length (bits) |
|-----------------------|---------------|
| MSG_TYPE ('00000011') | 8 |
| ACK_SEQ | 3 |
| MSG_SEQ | 3 |
| ACK_REQ | 1 |
| ENCRYPTION | 2 |

Zero or more occurrences of the following record:

| | |
|----------------------|----------------|
| RECORD_TYPE | 8 |
| RECORD_LEN | 8 |
| Type-specific fields | 8 × RECORD_LEN |

| | |
|----------|---|
| RESERVED | 7 |
|----------|---|

- MSG_TYPE - Message type.
The mobile station shall set this field to '00000011'.
- ACK_SEQ - Acknowledgment sequence number.
See 6.7.2.3.1.1.
- MSG_SEQ - Message sequence number.
See 6.7.2.3.1.1.
- ACK_REQ - Acknowledgment required indicator.
See 6.7.2.3.1.1.
- ENCRYPTION - Message encryption indicator.
See 6.7.2.3.1.2.

The mobile station shall include one occurrence of the following record for each information record to be included:

- RECORD_TYPE - Information record type.
The mobile station shall set this field to the record type code shown in Table 6.7.4-1 corresponding to the type of this information record.

- 1 **RECORD_LEN** - Information record length.
- 2 The mobile station shall set this field to the number of octets
- 3 in the type-specific fields of this record.
- 4 **Type-specific fields** - Type-specific fields.
- 5 The mobile station shall set these fields as specified in 6.7.4
- 6 for this type of information record.
- 7 **RESERVED** - Reserved bits.
- 8 The mobile station shall set this field to '0000000'.

6.7.2.3.2.4 Data Burst Message

When the mobile station sends a *Data Burst Message* on the Reverse Traffic Channel, it shall use the following variable-length message format:

| Field | Length (bits) |
|-----------------------|---------------|
| MSG_TYPE ('00000100') | 8 |
| ACK_SEQ | 3 |
| MSG_SEQ | 3 |
| ACK_REQ | 1 |
| ENCRYPTION | 2 |
| MSG_NUMBER | 8 |
| BURST_TYPE | 6 |
| NUM_MSGS | 8 |
| NUM_FIELDS | 8 |

NUM_FIELDS occurrences of the following field:

| | |
|-------------------|---|
| CHAR _i | 8 |
|-------------------|---|

| | |
|----------|---|
| RESERVED | 1 |
|----------|---|

- MSG_TYPE - Message type.
The mobile station shall set this field to '00000100'.
- ACK_SEQ - Acknowledgment sequence number.
See 6.7.2.3.1.1.
- MSG_SEQ - Message sequence number.
See 6.7.2.3.1.1.
- ACK_REQ - Acknowledgment required indicator.
See 6.7.2.3.1.1.
- ENCRYPTION - Message encryption indicator.
See 6.7.2.3.1.2.
- MSG_NUMBER - Message number within the data burst stream.
The mobile station shall set this field to the number of this message within the data burst stream.

BURST_TYPE - Data burst type.

The mobile station shall set the value of this field for the type of this data burst as defined in TSB58-A. If the mobile station sets this field equal to '111110', it shall set the first two CHAR_i fields of this message equal to EXTENDED_BURST_TYPE_INTERNATIONAL as described in the definition of CHAR_i below. If the mobile station sets this field equal to '111111', it shall set the first two CHAR_i fields of this message equal to the EXTENDED BURST TYPE as described in the definition of CHAR_i below.

NUM_MSGS - Number of messages in the data burst stream.

The mobile station shall set this field to the number of messages within this data burst stream.

NUM_FIELDS - Number of characters in this message.

The mobile station shall set this field to the number of CHAR_i fields included in this message.

CHAR_i - Character.

The mobile station shall include NUM_FIELDS occurrences of this field. The mobile station shall set these fields to the corresponding octet of the data burst stream.

If the BURST_TYPE field of this message is equal to '111110', the first two CHAR_i octets shall represent a 16 bit EXTENDED_BURST_TYPE_INTERNATIONAL field, which is encoded as shown below. The first ten bits of this field contain a binary mapping of the Mobile Country Code (MCC) associated with the national standards organization administering the use of the remaining octets of the message. Encoding of the MCC shall be as specified in 6.3.1.3. The remaining six bits of the EXTENDED_BURST_TYPE_INTERNATIONAL field shall specify the COUNTRY_BURST_TYPE. The mobile station shall set the value of the COUNTRY_BURST_TYPE according to the type of this data burst as defined in standards governed by the country where this data burst type is to be used.

| Field | Length (bits) |
|------------------------------------|----------------------|
| Mobile Country Code | 10 |
| COUNTRY_BURST_TYPE | 6 |
| Remaining CHAR _i fields | 8 × (NUM_FIELDS - 2) |

If the BURST TYPE field of this message is equal to '111111', the first two CHAR_i octets shall represent a single, 16 bit, EXTENDED BURST TYPE field, as shown below. The mobile station shall set the value of the EXTENDED BURST TYPE according to the type of this data burst as defined in TSB58-A.

1

| Field | Length (bits) |
|---|-------------------------------------|
| EXTENDED_BURST_TYPE (first two CHARi fields) | 16 |
| Remaining CHARi fields | $8 \times (\text{NUM_FIELDS} - 2)$ |

2

3

RESERVED - Reserved bits.

4

The mobile station shall set this field to '0'.

6.7.2.3.2.5 Pilot Strength Measurement Message

When the mobile station sends a *Pilot Strength Measurement Message*, it shall use the following variable-length message format:

| Field | Length (bits) |
|-----------------------|---------------|
| MSG_TYPE ('00000101') | 8 |
| ACK_SEQ | 3 |
| MSG_SEQ | 3 |
| ACK_REQ | 1 |
| ENCRYPTION | 2 |
| REF_PN | 9 |
| PILOT_STRENGTH | 6 |
| KEEP | 1 |

Zero or more occurrences of the following record:

| | |
|----------------|----|
| PILOT_PN_PHASE | 15 |
| PILOT_STRENGTH | 6 |
| KEEP | 1 |

| | |
|----------|-------------------|
| RESERVED | 0 - 7 (as needed) |
|----------|-------------------|

- MSG_TYPE - Message type.
The mobile station shall set this field to '00000101'.
- ACK_SEQ - Acknowledgment sequence number.
See 6.7.2.3.1.1.
- MSG_SEQ - Message sequence number.
See 6.7.2.3.1.1.
- ACK_REQ - Acknowledgment required indicator.
See 6.7.2.3.1.1.
- ENCRYPTION - Message encryption indicator.
See 6.7.2.3.1.2.
- REF_PN - Time reference PN sequence offset.
The mobile station shall set this field to the PN sequence offset of the pilot used by the mobile station to derive its time reference, relative to the zero offset pilot PN sequence in units of 64 PN chips.

1 PILOT_STRENGTH - Pilot strength.

2 The mobile station shall set this field to

$$3 \quad \quad \quad \lfloor -2 \times 10 \log_{10} PS \rfloor,$$

4 where PS is the strength of the pilot used by the mobile
5 station to derive its time reference (see 6.1.5.1), measured as
6 specified in 6.6.6.2.2. If this value ($\lfloor -2 \times 10 \log_{10} PS \rfloor$) is less
7 than 0, the mobile station shall set this field to '000000'. If
8 this value is greater than '111111', the mobile station shall
9 set this field to '111111'.

10 KEEP - Keep pilot indicator.

11 If the handoff drop timer (see 6.6.6.2.3) corresponding to the
12 pilot used by the mobile station to derive its time reference
13 (see 6.1.5.1) has expired, the mobile station shall set this field
14 to '0'; otherwise, the mobile station shall set this field to '1'.

15
16 If $P_REV_IN_USE_S$ is less than or equal to three or $SOFT_SLOPE_S$ is equal to '000000', the
17 mobile station shall include one occurrence of the three-field record given below for each
18 pilot in the Active Set and for each pilot in the Candidate Set, other than the pilot identified
19 by the REF_PN field. If $P_REV_IN_USE_S$ is greater than three and $SOFT_SLOPE_S$ is not
20 equal to '000000', the mobile station shall include one occurrence of the three-field record
21 given below for each pilot in the Active Set, for each pilot in the Candidate Set whose
22 strength exceeds T_ADD , and shall also include one occurrence of the three-field record
23 given below for each pilot in the Candidate Set whose strength satisfies the following
24 inequality:

$$25 \quad 10 \times \log_{10} PS > \frac{SOFT_SLOPE_S}{8} \times 10 \times \log_{10} \sum_{i \in A} PS_i + \frac{ADD_INTERCEPT_S}{2}$$

26 where the summation is performed over all pilots currently in the Active Set. The mobile
27 station shall not include these fields for the pilot identified by the REF_PN field.

28 PILOT_PN_PHASE - Pilot measured phase.

29 The mobile station shall set this field to the phase of the pilot
30 PN sequence relative to the zero offset pilot PN sequence of
31 this pilot, in units of one PN chip, as specified in 6.6.6.2.4.

32 PILOT_STRENGTH - Pilot strength.

33 The mobile station shall set this field to

$$34 \quad \quad \quad \lfloor -2 \times 10 \log_{10} PS \rfloor,$$

35 where PS is the strength of this pilot, measured as specified in
36 6.6.6.2.2. If this value ($\lfloor -2 \times 10 \log_{10} PS \rfloor$) is less than 0, the
37 mobile station shall set this field to '000000'. If this value is
38 greater than '111111', the mobile station shall set this field to
39 '111111'.

- 1 KEEP - Keep pilot indicator.
- 2 If the handoff drop timer (see 6.6.6.2.3) corresponding to this
- 3 pilot has expired, the mobile station shall set this field to '0';
- 4 otherwise, the mobile station shall set this field to '1'.
- 5
- 6 RESERVED - Reserved bits.
- 7 The mobile station shall add reserved bits as needed in order
- 8 to make the length of the entire message equal to an integer
- 9 number of octets. The mobile station shall set these bits
- 10 to '0'.

6.7.2.3.2.6 Power Measurement Report Message

When the mobile station sends a *Power Measurement Report Message*, it shall use the following variable-length message format:

| Field | Length (bits) |
|-----------------------|---------------|
| MSG_TYPE ('00000110') | 8 |
| ACK_SEQ | 3 |
| MSG_SEQ | 3 |
| ACK_REQ | 1 |
| ENCRYPTION | 2 |
| ERRORS_DETECTED | 5 |
| PWR_MEAS_FRAMES | 10 |
| LAST_HDM_SEQ | 2 |
| NUM_PILOTS | 4 |

NUM_PILOTS occurrences of the following field:

| | |
|----------------|---|
| PILOT_STRENGTH | 6 |
|----------------|---|

| | |
|----------|-------------------|
| RESERVED | 0 - 7 (as needed) |
|----------|-------------------|

- MSG_TYPE – Message type.
The mobile station shall set this field to '00000110'.
- ACK_SEQ – Acknowledgment sequence number.
See 6.7.2.3.1.1.
- MSG_SEQ – Message sequence number.
See 6.7.2.3.1.1.
- ACK_REQ – Acknowledgment required indicator.
See 6.7.2.3.1.1.
- ENCRYPTION – Message encryption indicator.
See 6.7.2.3.1.2.
- ERRORS_DETECTED – Number of frame errors detected.
If the number of bad frames (see 6.2.2.2) received on the Forward Fundamental Code Channel within the measurement period is less than or equal to 31, the mobile station shall set this field to that number (BAD_FRAMES_s, see 6.6.4.1.1). If that number exceeds 31, the mobile station shall set this field to '11111'.

| | | | |
|----|-----------------|---|--|
| 1 | PWR_MEAS_FRAMES | - | Number of frames received on the Forward Fundamental Code Channel within the measurement period. |
| 2 | | | |
| 3 | | | The mobile station shall set this field to the number of frames |
| 4 | | | received on the Forward Fundamental Code Channel within |
| 5 | | | the measurement period (TOT_FRAMES _s , see 6.6.4.1.1). |
| 6 | LAST_HDM_SEQ | - | <i>Extended Handoff Direction Message</i> or a <i>General Handoff</i> |
| 7 | | | <i>Direction Message</i> sequence number. |
| 8 | | | If an <i>Extended Handoff Direction Message</i> or a <i>General</i> |
| 9 | | | <i>Handoff Direction Message</i> has been received during this call, |
| 10 | | | the mobile station shall set this field to the value of the |
| 11 | | | HDM_SEQ field from the <i>Extended Handoff Direction Message</i> |
| 12 | | | or the <i>General Handoff Direction Message</i> that determined the |
| 13 | | | current Active Set. If no <i>Extended Handoff Direction Message</i> |
| 14 | | | or <i>General Handoff Direction Message</i> has been received |
| 15 | | | during this call, the mobile station shall set this field to '11'. |
| 16 | NUM_PILOTS | - | Number of pilots reported. |
| 17 | | | The mobile station shall set this field to the number of pilots |
| 18 | | | in the current Active Set. |
| 19 | PILOT_STRENGTH | - | Pilot strength. |
| 20 | | | The mobile station shall include one occurrence of this field |
| 21 | | | for each pilot in the Active Set. If the Active Set contains more |
| 22 | | | than one pilot, the mobile station shall include the pilot |
| 23 | | | strengths in the same order as in the <i>Extended Handoff</i> |
| 24 | | | <i>Direction Message</i> or the <i>General Handoff Direction Message</i> |
| 25 | | | that determined the current Active Set. |
| 26 | | | The mobile station shall set each occurrence of this field to |
| 27 | | | $[-2 \times 10 \log_{10} \text{PS}]$, |
| 28 | | | where PS is the strength of the pilot, measured as specified in |
| 29 | | | 6.6.6.2.2. If this value ($[-2 \times 10 \log_{10} \text{PS}]$) is less than 0, the |
| 30 | | | mobile station shall set this field to '000000'. If this value is |
| 31 | | | greater than '111111', the mobile station shall set this field to |
| 32 | | | '111111'. |
| 33 | RESERVED | - | Reserved bits. |
| 34 | | | The mobile station shall add reserved bits as needed in order |
| 35 | | | to make the length of the entire message equal to an integer |
| 36 | | | number of octets. The mobile station shall set these bits |
| 37 | | | to '0'. |

6.7.2.3.2.7 Send Burst DTMF Message

When the mobile station sends a *Send Burst DTMF Message*, it shall use the following variable-length message format:

| Field | Length (bits) |
|-----------------------|---------------|
| MSG_TYPE ('00000111') | 8 |
| ACK_SEQ | 3 |
| MSG_SEQ | 3 |
| ACK_REQ | 1 |
| ENCRYPTION | 2 |
| NUM_DIGITS | 8 |
| DTMF_ON_LENGTH | 3 |
| DTMF_OFF_LENGTH | 3 |

NUM_DIGITS occurrences of the following field:

| | |
|--------------------|---|
| DIGIT _i | 4 |
|--------------------|---|

| | |
|----------|-------------------|
| RESERVED | 0 - 7 (as needed) |
|----------|-------------------|

MSG_TYPE - Message type.

The mobile station shall set this field to '00000111'.

ACK_SEQ - Acknowledgment sequence number.

See 6.7.2.3.1.1.

MSG_SEQ - Message sequence number.

See 6.7.2.3.1.1.

ACK_REQ - Acknowledgment required indicator.

See 6.7.2.3.1.1.

ENCRYPTION - Message encryption indicator.

See 6.7.2.3.1.2.

NUM_DIGITS - Number of DTMF digits.

The mobile station shall set this field to the number of DTMF digits included in this message.

DTMF_ON_LENGTH - DTMF pulse width code.

The mobile station shall set this field to the DTMF_ON_LENGTH value shown in Table 6.7.2.3.2.7-1 corresponding to the requested width of DTMF pulses to be generated by the base station.

Table 6.7.2.3.2.7-1. Recommended DTMF Pulse Width

| DTMF_ON_LENGTH Field (binary) | Recommended Pulse Width |
|--|--------------------------------|
| 000 | 95 ms |
| 001 | 150 ms |
| 010 | 200 ms |
| 011 | 250 ms |
| 100 | 300 ms |
| 101 | 350 ms |
| All other DTMF_ON_LENGTH codes are reserved. | |

DTMF_OFF_LENGTH - DTMF inter-digit interval code.

The mobile station shall set this field to the DTMF_OFF_LENGTH value shown in Table 6.7.2.3.2.7-2 corresponding to the requested minimum interval between DTMF pulses to be generated by the base station.

Table 6.7.2.3.2.7-2. Recommended Minimum Inter-digit Interval

| DTMF_OFF_LENGTH Field (binary) | Recommended Minimum Inter-digit Interval |
|---|---|
| 000 | 60 ms |
| 001 | 100 ms |
| 010 | 150 ms |
| 011 | 200 ms |
| All other DTMF_OFF_LENGTH codes are reserved. | |

DIGIT_i - DTMF digit.

The mobile station shall include one occurrence of this field for each DTMF digit to be generated by the base station. The mobile station shall set each occurrence of this field to the code value shown in Table 6.7.1.3.2.4-4 corresponding to the dialed digit.

RESERVED - Reserved bits.

The mobile station shall add reserved bits as needed in order to make the length of the entire message equal to an integer number of octets. The mobile station shall set these bits to '0'.

6.7.2.3.2.8 Status Message

When the mobile station sends a *Status Message*, it shall use the following variable-length message format:

| Field | Length (bits) |
|-----------------------|----------------|
| MSG_TYPE ('00001000') | 8 |
| ACK_SEQ | 3 |
| MSG_SEQ | 3 |
| ACK_REQ | 1 |
| ENCRYPTION | 2 |
| RECORD_TYPE | 8 |
| RECORD_LEN | 8 |
| Type-specific fields | 8 × RECORD_LEN |
| RESERVED | 7 |

MSG_TYPE - Message type.

The mobile station shall set this field to '00001000'.

ACK_SEQ - Acknowledgment sequence number.

See 6.7.2.3.1.1.

MSG_SEQ - Message sequence number.

See 6.7.2.3.1.1.

ACK_REQ - Acknowledgment required indicator.

See 6.7.2.3.1.1.

ENCRYPTION - Message encryption indicator.

See 6.7.2.3.1.2.

RECORD_TYPE - Information record type.

The mobile station shall set this field to the record type value shown in Table 6.7.4-1 corresponding to the type of this information record.

RECORD_LEN - Information record length.

The mobile station shall set this field to the number of octets included in the type-specific fields of this information record.

Type-specific fields - Type-specific fields.

The mobile station shall set these fields as specified in 6.7.4 for this type of record.

RESERVED - Reserved bits.

The mobile station shall set this field to '0000000'.

1 6.7.2.3.2.9 Origination Continuation Message

2 When the mobile station sends an *Origination Continuation Message*, it shall use the
 3 following variable-length message format:

4

| Field | Length (bits) |
|-----------------------|---------------|
| MSG_TYPE ('00001001') | 8 |
| ACK_SEQ | 3 |
| MSG_SEQ | 3 |
| ACK_REQ | 1 |
| ENCRYPTION | 2 |
| DIGIT_MODE | 1 |
| NUM_FIELDS | 8 |

NUM_FIELDS occurrences of the following field:

| | |
|-------------------|--------|
| CHAR _i | 4 or 8 |
|-------------------|--------|

Zero or more occurrences of the following record:

| | |
|----------------------|----------------|
| RECORD TYPE | 8 |
| RECORD_LEN | 8 |
| Type-specific fields | 8 × RECORD_LEN |

| | |
|----------|-------------------|
| RESERVED | 0 - 7 (as needed) |
|----------|-------------------|

5

6 MSG_TYPE - Message type.

7 The mobile station shall set this field to '00001001'.

8 ACK_SEQ - Acknowledgment sequence number.

9 See 6.7.2.3.1.1.

10 MSG_SEQ - Message sequence number.

11 See 6.7.2.3.1.1.

12 ACK_REQ - Acknowledgment required indicator.

13 See 6.7.2.3.1.1.

14 ENCRYPTION - Message encryption indicator.

15 See 6.7.2.3.1.2.

16 DIGIT_MODE - Digit mode indicator.

17 The mobile station shall set this field to the DIGIT_MODE
 18 value from the Access Channel *Origination Message* for which
 19 this message is a continuation.

| | | | |
|----|---|---|---|
| 1 | NUM_FIELDS | - | Number of dialed digits in this message. |
| 2 | | | The mobile station shall set this field to the number of dialed |
| 3 | | | digits included in this message. |
| 4 | CHARi | - | A dialed digit or character. |
| 5 | | | The mobile station shall include NUM_FIELDS occurrences of |
| 6 | | | this field. The mobile station shall include occurrences of this |
| 7 | | | field for all dialed digits after those sent in the Access Channel |
| 8 | | | <i>Origination Message</i> of which this message is a continuation. |
| 9 | | | If the DIGIT_MODE field is set to '0', the mobile station shall |
| 10 | | | set each occurrence of this field to the code value shown in |
| 11 | | | Table 6.7.1.3.2.4-4 corresponding to the dialed digit. If the |
| 12 | | | DIGIT_MODE field is set to '1', the mobile station shall set |
| 13 | | | each occurrence of this field to the ASCII representation |
| 14 | | | corresponding to the dialed digit, as specified in ANSI X3.4, |
| 15 | | | with the most significant bit set to '0'. |
| 16 | If the MORE_RECORDS field in the last Access Channel <i>Origination Message</i> , of which this | | |
| 17 | message is a continuation, is set to '1', the mobile station shall include one or more | | |
| 18 | occurrences of the following three-field record; otherwise, the mobile station shall not | | |
| 19 | include the following record. | | |
| 20 | RECORD_TYPE | - | Information record type. |
| 21 | | | The mobile station shall set this field to the record type value |
| 22 | | | shown in Table 6.7.4-1. |
| 23 | RECORD_LEN | - | Information record length. |
| 24 | | | The mobile station shall set this field to the number of octets |
| 25 | | | in the type-specific fields included in this record. |
| 26 | Type-specific fields | - | Type-specific fields. |
| 27 | | | The mobile station shall include type-specific fields as |
| 28 | | | specified in 6.7.4. |
| 29 | | | |
| 30 | RESERVED | - | Reserved bits. |
| 31 | | | The mobile station shall add reserved bits as needed in order |
| 32 | | | to make the length of the entire message equal to an integer |
| 33 | | | number of octets. The mobile station shall set these bits |
| 34 | | | to '0'. |

6.7.2.3.2.10 Handoff Completion Message

When the mobile station sends a *Handoff Completion Message*, it shall use the following variable-length message format:

| Field | Length (bits) |
|-----------------------|---------------|
| MSG_TYPE ('00001010') | 8 |
| ACK_SEQ | 3 |
| MSG_SEQ | 3 |
| ACK_REQ | 1 |
| ENCRYPTION | 2 |
| LAST_HDM_SEQ | 2 |

One or more occurrences of the following field:

| | |
|----------|---|
| PILOT_PN | 9 |
|----------|---|

| | |
|----------|-------------------|
| RESERVED | 0 - 7 (as needed) |
|----------|-------------------|

- MSG_TYPE - Message type.
The mobile station shall set this field to '00001010'.
- ACK_SEQ - Acknowledgment sequence number.
See 6.7.2.3.1.1.
- MSG_SEQ - Message sequence number.
See 6.7.2.3.1.1.
- ACK_REQ - Acknowledgment required indicator.
See 6.7.2.3.1.1.
- ENCRYPTION - Message encryption indicator.
See 6.7.2.3.1.2.
- LAST_HDM_SEQ - *Extended Handoff Direction Message* or *General Handoff Direction Message* sequence number.
The mobile station shall set this field to the value of the HDM_SEQ field from the *Extended Handoff Direction Message* or the *General Handoff Direction Message* that determined the current Active Set.

1 PILOT_PN - Pilot PN sequence offset.

2 The mobile station shall include one occurrence of this field
3 for each pilot in the current Active Set. The mobile station
4 shall set this field to the pilot PN sequence offset, relative to
5 the zero offset pilot PN sequence in units of 64 PN chips, for
6 this pilot. If the Active Set contains more than one pilot, the
7 mobile station shall include the pilot offsets in the same order
8 as in the *Extended Handoff Direction Message* or the *General*
9 *Handoff Direction Message* that determined the current Active
10 Set.

11 RESERVED - Reserved bits.

12 The mobile station shall add reserved bits as needed in order
13 to make the length of the entire message equal to an integer
14 number of octets. The mobile station shall set these bits
15 to '0'.

6.7.2.3.2.11 Parameters Response Message

When the mobile station sends a *Parameters Response Message*, it shall use the following variable-length message format:

| Field | Length (bits) |
|-----------------------|---------------|
| MSG_TYPE ('00001011') | 8 |
| ACK_SEQ | 3 |
| MSG_SEQ | 3 |
| ACK_REQ | 1 |
| ENCRYPTION | 2 |

One or more occurrences of the following record:

| | |
|---------------|---------------------------|
| PARAMETER_ID | 16 |
| PARAMETER_LEN | 10 |
| PARAMETER | 0 or PARAMETER_LEN + 1 |

| | |
|----------|-------------------|
| RESERVED | 0 - 7 (as needed) |
|----------|-------------------|

- MSG_TYPE - Message type.
The mobile station shall set this field to '00001011'.
- ACK_SEQ - Acknowledgment sequence number.
See 6.7.2.3.1.1.
- MSG_SEQ - Message sequence number.
See 6.7.2.3.1.1.
- ACK_REQ - Acknowledgment required indicator.
See 6.7.2.3.1.1.
- ENCRYPTION - Message encryption indicator.
See 6.7.2.3.1.2.

1 The mobile station shall include one occurrence of the following three-field record for each
2 occurrence of the PARAMETER_ID field in the Forward Traffic Channel *Retrieve Parameters*
3 *Message* to which this message is a response. See Annex E.

4 PARAMETER_ID - Parameter identification.

5 The mobile station shall set this field to the value of the
6 PARAMETER_ID field for this parameter from the *Retrieve*
7 *Parameters Message* to which this message is a response.

8 PARAMETER_LEN - Parameter length.

9 The mobile station shall set this field to the length shown in
10 Table E-1 corresponding to this PARAMETER_ID.

11 If the mobile station is unable to return the value of this
12 parameter, or if the parameter identification is unknown, the
13 mobile station shall set this field to '11111111'.

14 PARAMETER - Parameter value.

15 The mobile station shall set this field equal to the value of the
16 parameter shown in Table E-1 corresponding to the
17 PARAMETER_ID field of the record.

18 If the mobile station is unable to return the value of this
19 parameter, or if the parameter identification is unknown, the
20 mobile station shall omit this field.

21
22 RESERVED - Reserved bits.

23 The mobile station shall add reserved bits as needed in order
24 to make the length of the entire message equal to an integer
25 number of octets. The mobile station shall set these bits
26 to '0'.